U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

0074282

NOV 07 2007

07-ESQ-205

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

Dear Ms. Hedges:

SUBMITTAL OF HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT MODIFICATION NOTIFICATION FORM 24590-WTP-PCN-ENV-06-001

Reference: WA7890008967, "Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste, Part III, Operating Unit 10, 'Waste Treatment and Immobilization Plant.'"

This letter transmits Hanford Facility RCRA Permit Modification Notification Form 24590-WTP-PCN-ENV-06-001, attached, for the Washington State Department of Ecology (Ecology) review and approval. The form describes a requested Class 1 modification to the Reference.

Permit Modification Notification Form 24590-WTP-PCN-ENV-06-001 updates the Piping and Instrumentation Diagram Symbols and Legend (24590-WTP-M6-50-P0001 through P0006) found in Appendix 5 of the Reference.

Ecology was provided an opportunity to review the modification notification form and the associated information.

If you have any questions, please contact me, or your staff may contact Lori A. Huffman, Office of Environmental Safety and Quality, (509) 376-0104.

Sincerely,

for Shirley J. Olinger, Acting Manager
Office of River Protection

ESQ:LAH

Attachment

cc: See page 2

cc w/attach:
Administrative Record
BNI Correspondence
Environmental Portal, LMSI

cc electronic:
J. Colby, BNI
W. S. Elkins, BNI
B. G. Erlandson, BNI
P. A. Fisher, BNI
J. S. Hill, BNI
S. Murdock, BNI
P. Peistrup, BNI
D. Becker, Ecology
B. Becker-Khaleel, Ecology (1 hard copy)
R. Biyani, Ecology
E. A. Fredenburg, Ecology
T. Gao, Ecology
A. A. Hamar, Ecology
J. Hensley, Ecology
S. Lijek, Ecology
B. Speer, Ecology
T. Williams, Ecology
S. A. Thompson, FHI
A. C. McKarns, RL
D. J. Sommer, SCS

cc w/o attach:
D. A. Klein, BNI
J. Cox, CTUIR
S. Harris, CTUIR
S. L. Dahl, Ecology
G. P. Davis, Ecology
G. Bohnee, NPT
K. Niles, Oregon Energy
R. Jim, YN

Attachment
07-ESQ-205

Hanford Facility RCRA Permit Modification Notification
Form 24590-WTP-PCN-ENV-06-001

Quarter Ending 12/30/07 24590-WTP-PCN-ENV-06-001

Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

Index

Submitted by Co-Operator:

D. A. Klein — Date: 10/29/07

Reviewed by ORP Program Office:

S. J. Olinger — Date: 11/07/07

Quarter Ending 12/30/07 24590-WTP-PCN-ENV-06-001

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Waste Treatment and Immobilization Plant	**Part III, Operating Unit 10**

Description of Modification:

The purpose of this Class 1 prime modification is to update Piping and Instrumentation Diagrams, "P&ID Symbols and Legend," sheets one through six. The following permit P&IDs are submitted to replace those currently in Appendix 5.

Appendix 5			
Replace:	24590-WTP-M6-50-P0001, Rev. 1	With:	24590-WTP-M6-50-P0001, Rev. 2
	24590-WTP-M6-50-P0002, Rev. 1		24590-WTP-M6-50-P0002, Rev. 2
	24590-WTP-M6-50-P0003, Rev. 1		24590-WTP-M6-50-P0003, Rev. 2
	24590-WTP-M6-50-P0004, Rev. 1		24590-WTP-M6-50-P0004, Rev. 2
	24590-WTP-M6-50-P0005, Rev. 1		24590-WTP-M6-50-P0005, Rev. 2
	24590-WTP-M6-50-P0006, Rev. 1		24590-WTP-M6-50-P0006, Rev. 2
			24590-WTP-M6-50-P0007, Rev. 0
			24590-WTP-M6-50-P0008, Rev. 0

The referenced P&IDs are complete revisions. They incorporate changes provided in applicable document change forms (DCNs) and changes associated with the resolution to comments on DCNs since the issuance of the last revision of the permit drawings. This modification requests Ecology approval of the specific changes to these P&IDs that are indicated by notes, clouds, and revision triangles shown on the "information only" version of the permit drawings included to support review of this PCN. Unclouded versions of the permit drawings are provided for incorporation into the permit. Revisions are the result of ongoing design changes. The following identifies the significant types of changes on the attached drawings.

Summary of changes to Symbols and Legends sheets 1-8:

- Added and modified symbols
- Added and modified descriptions of symbols
- Added and deleted notes
- Moved symbols to other categories/columns or sheets:
- Added naming conventions to -P0002
- Modified instrument code letter identification on -P0004
- Added and modified typical P&ID details (e.g., fluidics details on -P0006)
- Added two drawings -P0007 and -P0008 to handle overflow from other drawings
- Added piping slope notes to -P0008

There are no outstanding DCNs against these drawings.

Quarter Ending 12/30/07 24590-WTP-PCN-ENV-06-001

WAC 173-303-830 Modification Class: [1] [2]	Class 1	Class [1]1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter Relevant WAC 173-303-830, Appendix I Modification citation number: NA

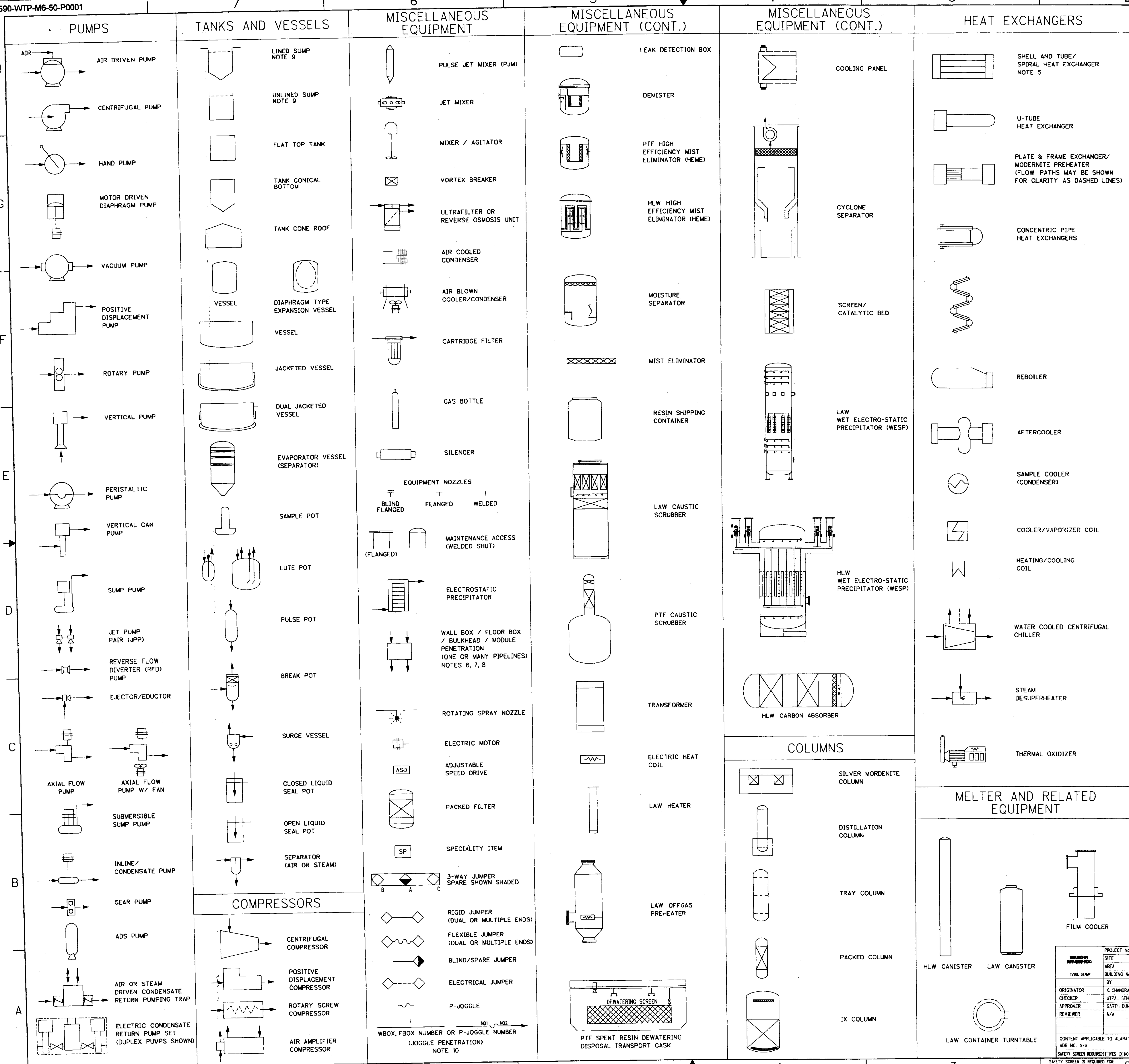
Enter wording of WAC 173-303-830, Appendix I Modification citation: NA

In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class [1]1 modification. WAC 173-303-830(d)(ii) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved: ☐ Yes ☐ No (state reason for denial)	Reviewed by Ecology:
Reason for denial:	B. Becker-Khaleel Date

[1] Class 1 modifications requiring prior Agency approval.

[2] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to a Class '1, if applicable.


PUMPS
AIR
AIR DRIVEN PUMP
CENTRIFUGAL PUMP
HAND PUMP
MOTOR DRIVEN DIAPHRAGM PUMP
VACUUM PUMP
POSITIVE DISPLACEMENT PUMP
ROTARY PUMP
VERTICAL PUMP
PERISTALTIC PUMP
VERTICAL CAN PUMP
SUMP PUMP
JET PUMP PAIR (JPP)
REVERSE FLOW DIVERTER (RFD) PUMP
EJECTOR/EDUCTOR
AXIAL FLOW PUMP
AXIAL FLOW PUMP W/ FAN
SUBMERSIBLE SUMP PUMP
INLINE/ CONDENSATE PUMP
GEAR PUMP
ADS PUMP
AIR OR STEAM DRIVEN CONDENSATE RETURN PUMPING TRAP
ELECTRIC CONDENSATE RETURN PUMP SET (DUPLEX PUMPS SHOWN)
TANKS AND VESSELS
LINED SUMP NOTE 9
UNLINED SUMP NOTE 9
FLAT TOP TANK
TANK CONICAL BOTTOM
TANK CONE ROOF
VESSEL
DIAPHRAGM TYPE EXPANSION VESSEL
VESSEL
JACKETED VESSEL
DUAL JACKETED VESSEL
EVAPORATOR VESSEL (SEPARATOR)
SAMPLE POT
LUTE POT
PULSE POT
BREAK POT
SURGE VESSEL
CLOSED LIQUID SEAL POT
OPEN LIQUID SEAL POT
SEPARATOR (AIR OR STEAM)
COMPRESSORS
CENTRIFUGAL COMPRESSOR
POSITIVE DISPLACEMENT COMPRESSOR
ROTARY SCREW COMPRESSOR
AIR AMPLIFIER COMPRESSOR
MISCELLANEOUS EQUIPMENT
PULSE JET MIXER (PJM)
JET MIXER
MIXER / AGITATOR
VORTEX BREAKER
ULTRAFILTER OR REVERSE OSMOSIS UNIT
AIR COOLED CONDENSER
AIR BLOWN COOLER/CONDENSER
CARTRIDGE FILTER
GAS BOTTLE
SILENCER
EQUIPMENT NOZZLES
BLIND FLANGED
FLANGED
WELDED
(FLANGED)
MAINTENANCE ACCESS (WELDED SHUT)
ELECTROSTATIC PRECIPITATOR
WALL BOX / FLOOR BOX / BULKHEAD / MODULE PENETRATION (ONE OR MANY PIPELINES) NOTES 6, 7, 8
ROTATING SPRAY NOZZLE
ELECTRIC MOTOR
ASD
ADJUSTABLE SPEED DRIVE
PACKED FILTER
SP
SPECIALITY ITEM
B A C
3-WAY JUMPER SPARE SHOWN SHADED
RIGID JUMPER (DUAL OR MULTIPLE ENDS)
FLEXIBLE JUMPER (DUAL OR MULTIPLE ENDS)
BLIND/SPARE JUMPER
ELECTRICAL JUMPER
P-JOGGLE
N01 N02
WBOX, FBOX NUMBER OR P-JOGGLE NUMBER (JOGGLE PENETRATION) NOTE 10
MISCELLANEOUS EQUIPMENT (CONT.)
LEAK DETECTION BOX
DEMISTER
PTF HIGH EFFICIENCY MIST ELIMINATOR (HEME)
HLW HIGH EFFICIENCY MIST ELIMINATOR (HEME)
MOISTURE SEPARATOR
MIST ELIMINATOR
RESIN SHIPPING CONTAINER
LAW CAUSTIC SCRUBBER
PTF CAUSTIC SCRUBBER
TRANSFORMER
ELECTRIC HEAT COIL
LAW HEATER
LAW OFFGAS PREHEATER
DEWATERING SCREEN
PTF SPENT RESIN DEWATERING DISPOSAL TRANSPORT CASK
MISCELLANEOUS EQUIPMENT (CONT.)
COOLING PANEL
CYCLONE SEPARATOR
SCREEN/ CATALYTIC BED
LAW WET ELECTRO-STATIC PRECIPITATOR (WESP)
HLW WET ELECTRO-STATIC PRECIPITATOR (WESP)
HLW CARBON ABSORBER
COLUMNS
SILVER MORDENITE COLUMN
DISTILLATION COLUMN
TRAY COLUMN
PACKED COLUMN
IX COLUMN
HEAT EXCHANGERS
SHELL AND TUBE/ SPIRAL HEAT EXCHANGER NOTE 5
U-TUBE HEAT EXCHANGER
PLATE & FRAME EXCHANGER/ MODERNITE PREHEATER (FLOW PATHS MAY BE SHOWN FOR CLARITY AS DASHED LINES)
CONCENTRIC PIPE HEAT EXCHANGERS
REBOILER
AFTERCOOLER
SAMPLE COOLER (CONDENSER)
COOLER/VAPORIZER COIL
HEATING/COOLING COIL
WATER COOLED CENTRIFUGAL CHILLER
STEAM DESUPERHEATER
THERMAL OXIDIZER
MELTER AND RELATED EQUIPMENT
HLW CANISTER
LAW CANISTER
FILM COOLER
LAW CONTAINER TURNTABLE

NOTES:

1-3. DELETED

4. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
5. MULTI-PASS HEAT EXCHANGERS MAY BE SHOWN WITH SPLIT CHANNEL(S).
6. PIPING WITHIN WALL MODULES HAS THE SAME SEISMIC CATEGORY AND QUALITY LEVEL AS THE ATTACHED PIPE.
7. BULKHEAD STRUCTURES ARE SEISMIC CATEGORY SC-II AND QUALITY LEVEL Q.
8. THESE ITEMS ARE NOT LISTED IN THE COMPONENT INFORMATION SYSTEM (CIS) AND ARE SHOWN FOR CONSTRUCTION REFERENCE ONLY.
9. SHOWN AS COVERED (GRATE OR OTHER) SUMP.
10. THE GEOMETRY OF JOGGLED (OFFSET) PENETRATION IS QUALITY LEVEL Q FOR RADIATION PROTECTION. THE QUALITY LEVEL AND SEISMIC CATEGORY DESIGNATIONS OF PIPING WITHIN JOGGLES ARE THE SAME AS CONNECTING PIPING. PIPING WITHIN SPARE JOGGLES IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-I.
11. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.
12. REVISED TO INCORPORATE 24590-WTP-M6N-50-00001, 00015, 00030, 00036, 00037, 00039 AND ADDITION OF VARIOUS SYMBOLS AND EDITORIAL COMMENTS.

PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR, AND BYPRODUCT MATERIAL AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
2	ISSUED FOR PERMITTING USE	LCS	WH	ED	RLG	10/19/07
1	ISSUED FOR PERMITTING USE	TB	BL	DCP	MH	12/13/03
0	ISSUED FOR PERMITTING USE	KC	US	N/A	GD	7/24/02

REVISION HISTORY

ISSUE STAMP		
PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.		
	BY	DATE
ORIGINATOR	K. CHANDRASEKARN	7/17/02
CHECKER	UTPAL SEN	7/17/02
APPROVER	GARTH DUNCAN	7/24/02
REVIEWER	N/A	

CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO E&NS INITIAL IF YES

BECHTEL
RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID SYMBOLS AND LEGEND SHEET 1 OF 8

SCALE: NONE
24590-WTP-M6-50-P0001
REV 2

SAFETY SCREEN IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002
'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED
R10834289
09/27/2007 05:11:07 PM
PLOTTED BY: lcsanvic
C:\Work\lcsanvic\dms05067\WTPM650P0001.dgn

VALVES

NORMALLY OPEN | NOTE 13 | NORMALLY CLOSED

- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- PLUG VALVE
- STOP CHECK VALVE
- DIAPHRAGM VALVE
- ANGLE PLUG VALVE
- ANGLE VALVE
- NEEDLE VALVE
- CIRCUIT SETTER/BALANCING VALVE
- HYDRONIC BALANCING VALVE
- CHECK VALVE
- CHECK VALVE, SPRING LOADED
- EXCESS FLOW CHECK VALVE
- FOOT CHECK VALVE
- FLOAT VALVE
- PINCH VALVE
- BUTTERFLY VALVE NOTE 14
- ANGLE CHECK VALVE
- 3-WAY MIXING GATE VALVE
- 3-WAY PLUG VALVE NOTE 11
- 3-WAY BALL VALVE NOTE 11
- 3-WAY GATE SPLITTER VALVE
- 4-WAY PLUG VALVE NOTE 12
- 4-WAY BALL VALVE NOTE 12
- PRESSURE RELIEF VALVE (SEE 24590-WTP-M6-50-00003)
- AIR FLOW — VACUUM RELIEF VALVE (SEE 24590-WTP-M6-50-00003)
- FC - VALVE FAILS CLOSED (SHOWN)
  FI - VALVE FAILS INDETERMINATE
  FL - VALVE FAILS LAST POSITION
  FO - VALVE FAILS OPEN
- CONTROL VALVE W/HANDWHEEL
- MULTIWAY DIVERTER VALVE WITH PISTON ACTUATOR
- STANDARD DIVERTER VALVE WITH PISTON ACTUATOR
- ROTARY VALVE
- 2-WAY DIVERTER VALVE W/PISTON ACTUATOR

VALVES (CONT.)

- PI 1234 / PI 1235, V-00002 / V-00003 — INSTRUMENT ROOT VALVE (3/4" WHEN SHOWN ON THE PROCESS LINE AND 1/2" WHEN SHOWN ON THE INSTRUMENT LINE) PIPING RESPONSIBLE, UP TO AND INCLUDING, ROOT VALVE
- SLIDE VALVE
- SLIDE VALVE WITH SEAL

IN LINE ITEMS

- WYE / LATERAL
- Y-STRAINER
- BASKET STRAINER
- DUPLEX STRAINER
- START-UP STRAINER
- SCREEN STRAINER
- T-TYPE STRAINER
- REMOVABLE SPOOL PIECE
- REMOVABLE FLEXIBLE CONNECTION
- SCREWED CAP
- WELDED CAP
- BREATHABLE CAP
- VICTAULIC CAP
- VICTAULIC FITTING
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- EXPANSION JOINT / BELLOWS
- FLANGE
- FLANGE - BLINDED
- UNION
- RESTRICTION ORIFICE
- HOSE CONNECTION
- HOSE COUPLER
- FLEX HOSE/ HOSE ASSEMBLY
- QUICK DISCONNECT
- F — IN-LINE FILTER
- T — IN-LINE TRAP
- IN-LINE MIXER
- MIXING TEE
- SPARK/FLAME ARRESTOR
- UV — UV STERILIZER
- PSD — PUMP SUCTION DIFFUSER
- DEMISTER
- (CLOSED) (OPEN) SPECTACLE BLIND

VENT/DRAIN COMPONENTS

- VENT
- VENT WITH FLAME TRAP AND HOLDER
- VENT WITH MESH GUARD
- V — AUTOMATIC VENT
- VACUUM BREAKER OR PRESSURE/VACUUM BREAKER
- FLOOR DRAIN (WITH STRAINER)
- FLOOR DRAIN (OPEN)
- FLOOR DRAIN (PLUGGED)
- BULGE/SAMPLER FLOOR DRAIN
- LOOP SEAL/P-TRAP (LUTE)
- WATER HAMMER ARRESTOR
- CUPSINK
- FILL FUNNEL

FLOW LINES

- PRIMARY FLOW
- SECONDARY FLOW
- DRAIN LINE
- INSULATED LINE
- INSULATED AND HEAT TRACED LINE
- COAXIAL LINE FOR SECONDARY CONTAINMENT
- HEAT TRACED PRIMARY FLOW WITHOUT INSULATION
- BURIED

BOUNDARIES

S11B | S11C — PIPELINE BREAK

USE PIPELINE BREAKS TO DENOTE TRANSITIONS IN:
- PIPING MATERIAL CLASS SPECIFICATION
- ABOVE GROUND / UNDERGROUND PIPING
- HOT CELL / BLACK CELL PIPING
- VENDOR / BECHTEL SCOPE CHANGE INTERFACE
- OTHER PIPELINE ATTRIBUTES (SEE ABBREVIATIONS FOR APPROPRIATE NOTATION)

- Q — QUALITY LEVEL (Q, CM)
- I — SEISMIC CATEGORY (I,II,III,IV,V)
- REFERENCE TO EQUIPMENT SHOWN ON ANOTHER DRAWING
- EQUIPMENT SKID OR VENDOR PACKAGE NOTE 9
- FIRE AREA BOUNDARY
- FUTURE — MELTER 2, PTF-M6-PSW-00001 A4 — GRAYSCALE

NAMING CONVENTIONS

DRAWING NUMBERS

24590-HLW-M6-DIW-00001
- RPP-WTP JOB NUMBER
- FACILITY
- DOCUMENT TYPE
- SYSTEM LOCATOR
- DRAWING SEQUENTIAL NUMBER

EQUIPMENT NUMBERS

URR-HX-00001
- SYSTEM LOCATOR
- COMPONENT IDENTIFIER
- SEQUENCE NUMBER

PIPELINE/BRANCH NUMBERS

1 CXP-JS-00001-S11B-01-B01
- SECTION NUMBER (NORMALLY NOT SHOWN)
- SYSTEM LOCATOR
- FLUID SERVICE
- SEQUENCE NUMBER
- PIPE SPEC
- PIPE SIZE
- BRANCH NUMBER IF NEEDED

1 01-B01
- SECTION NUMBER (NORMALLY NOT SHOWN)
- PIPE SIZE
- BRANCH NUMBER

PIPING SPECIALTY NUMBERS

HPS-SP-00001
- SYSTEM LOCATOR
- COMPONENT IDENTIFIER
- SEQUENCE NUMBER

VALVE NUMBERS

HPS-V-00001
- SYSTEM LOCATOR
- COMPONENT IDENTIFIER
- SEQUENCE NUMBER

ROOT VALVE NUMBERS

NOTE 8

V-00001
- COMPONENT IDENTIFIER
- SEQUENCE NUMBER

IN LINE COMPONENT NUMBERS

HPS-STR-00001
- SYSTEM LOCATOR
- COMPONENT IDENTIFIER
- SEQUENCE NUMBER

OFF SHEET CONNECTOR

SERVICE DESCRIPTION ORIGIN/DESTINATION

HLW-M6-DIW-00001 F4
- DRAWING COORDINATES
- DRAWING SEQUENTIAL NUMBER
- SYSTEM LOCATOR
- DOCUMENT TYPE
- FACILITY

SAFETY

- EYE WASH
- SHOWER/EYE WASH

FANS AND BLOWERS

- CENTRIFUGAL FAN
- BLOWER

HUMIDIFIERS

- G - LOW PRESSURE STEAM GRID (SHOWN)
- S - STEAM PAN
- H - HOT WATER PAN
- E - ELECTRIC PAN
- W - WATER

COILS

- H - HEATING COIL (SHOWN)
  - PH - PRE-HEATING COIL
  - HW - HOT WATER (SHOWN)
  - S - STEAM
  - E - ELECTRIC
  - G - GAS
  - HR - HEAT RECOVERY
- C - COOLING COIL (SHOWN)
  - CH - REFRIG. COOLED CHILLED WATER (SHOWN)
  - CW - COOLING WATER
  - DX - REFRIGERANT DIRECT EXPANSION

IN-BLEED

- IN-BLEED UNIT

AIR CLEANING DEVICES

- LOW — LOW EFFICIENCY ROUGHING FILTER 10% TO 35% EFFICIENCY BY ASHRAE WEIGHT TEST (SHOWN)
- MOD — MODERATE EFFICIENCY FILTER 20% TO 80% EFFICIENCY BY ASHRAE STAIN TEST
- HIGH — HIGH EFFICIENCY FILTER 85% EFFICIENCY BY ASHRAE STAIN TEST TO 95% EFFICIENCY FOR 0.30 MICROMETER DOP
- HEPA — HIGH EFFICIENCY PARTICULATE AIR FILTER 99.97% EFFICIENCY FOR 0.30 MICROMETER DOP
- OR HEPA 6 — (NUMBER OF FILTER ELEMENTS IN HOUSING)
- ULPA — ULTRALOW PENETRATION AIR FILTER 99.999% EFFICIENCY FOR 0.12 MICROMETER DOP

(AIR FLOW)

DAMPERS

- LOUVER DAMPER

NOTES:

1. DELETED
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.

3-7. DELETED

8. ROOT VALVE SYSTEM IDENTIFIER IS NOT SHOWN, BUT SHALL MATCH THE SAME SYSTEM IDENTIFIER AS THE LINE NUMBER IT IS ATTACHED TO.
9. EQUIPMENT SKID OR VENDOR PACKAGE TO BE DESIGNED BY VENDOR WILL INDICATE THIS LINE STYLE (BY "VENDOR PACKAGE" OR "VENDOR" AND "BECHTEL" WITH ARROWS, FOR EXAMPLE). SKID OR PACKAGE TO BE DESIGNED BY BECHTEL WILL NOT INDICATE VENDOR, WILL SHOW BOUNDARY LINE ONLY.
10. DELETED
11. 3-WAY VALVES ARE SHOWN WITH ONE PATH NORMALLY CLOSED.
12. 4-WAY VALVES ARE SHOWN WITH TWO PATHS NORMALLY CLOSED.
13. DRAIN VALVES ARE SHOWN ON P&IDs AS HALF SIZE.
14. BUTTERFLY VALVE SHALL BE DESIGNATED NO (NORMALLY OPENED) OR NC (NORMALLY CLOSED).
15. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.
16. REVISED TO INCORPORATE 24590-WTP-M6N-50-00001, 00002, 00011, 00015, 00016, 00029, 00030, 00031, 00036, 00037, 00039, 00041, ADDED FIRE AREA BOUNDARY LINE TYPE AND INCORPORATED VARIOUS EDITORIAL COMMENTS.

10/12/07 EXPIRES: 07/28/07

PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR, AND BYPRODUCT MATERIAL AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
2	ISSUED FOR PERMITTING USE	[signature]	[signature]	[signature]	[signature]	10/14/07
1	ISSUED FOR PERMITTING USE	TB	BL	DCP	MH	12/12/03
0	ISSUED FOR PERMITTING USE	KC	US	N/A	GD	7/24/02

REVISION HISTORY

ISSUED BY RPP-WTP PDC / ISSUE STAMP		
PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.		
	BY	DATE
ORIGINATOR	K. CHANDRASEKARN	7/17/02
CHECKER	UTPAL SEN	7/17/02
APPROVER	GARTH DUNCAN	7/24/02
REVIEWER	N/A	

CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO E&NS INITIAL IF YES ____

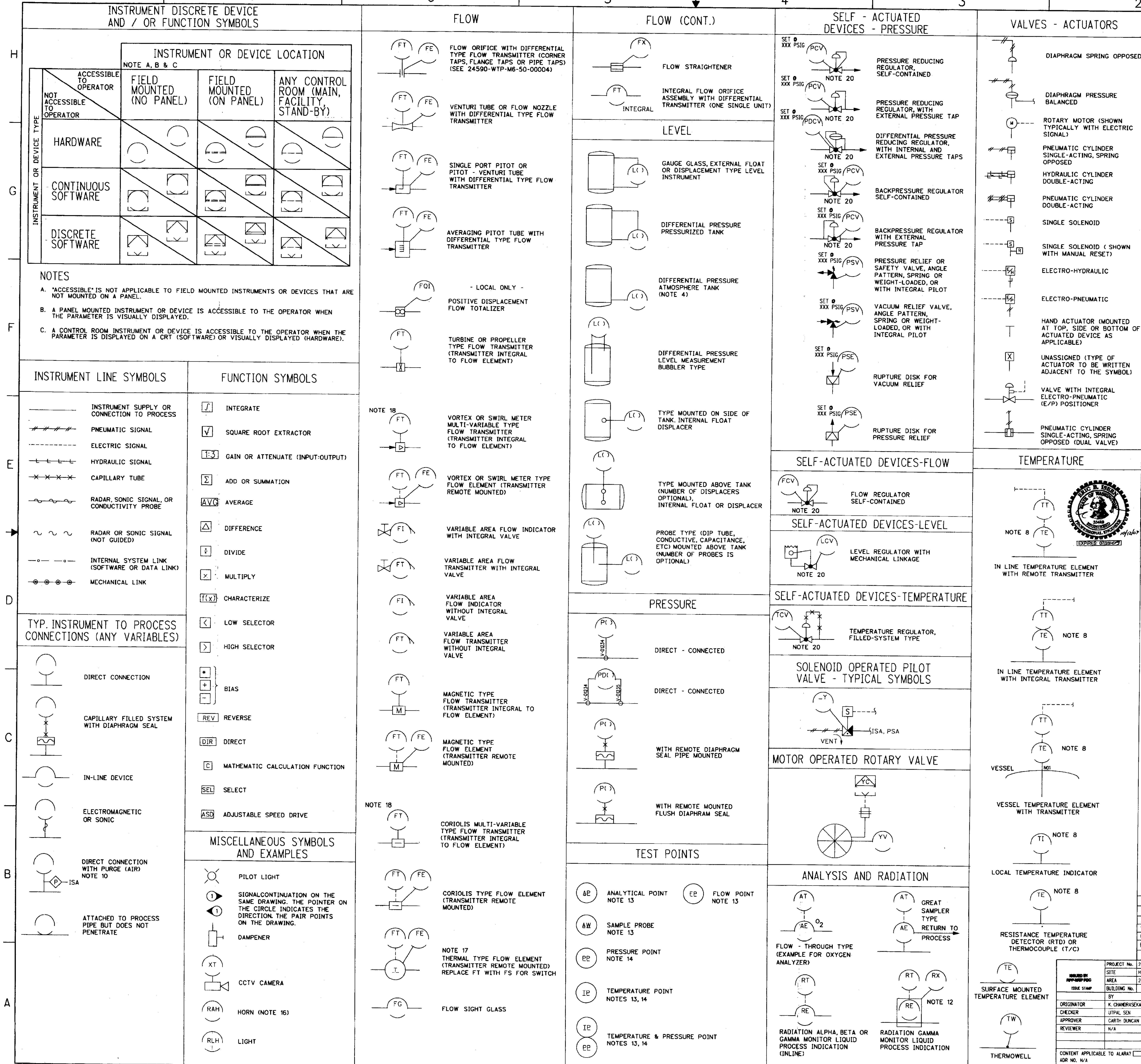
BECHTEL
RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID SYMBOLS AND LEGEND SHEET 2 OF 8

SCALE:

24590-WTP-M6-50-P0002 REV 2



INSTRUMENT DISCRETE DEVICE AND / OR FUNCTION SYMBOLS
INSTRUMENT OR DEVICE LOCATION
NOTE A, B & C
ACCESSIBLE TO OPERATOR
NOT ACCESSIBLE TO OPERATOR
FIELD MOUNTED (NO PANEL)
FIELD MOUNTED (ON PANEL)
ANY CONTROL ROOM (MAIN, FACILITY, STAND-BY)
INSTRUMENT OR DEVICE TYPE
HARDWARE
CONTINUOUS SOFTWARE
DISCRETE SOFTWARE
NOTES
A. "ACCESSIBLE" IS NOT APPLICABLE TO FIELD MOUNTED INSTRUMENTS OR DEVICES THAT ARE NOT MOUNTED ON A PANEL.
B. A PANEL MOUNTED INSTRUMENT OR DEVICE IS ACCESSIBLE TO THE OPERATOR WHEN THE PARAMETER IS VISUALLY DISPLAYED.
C. A CONTROL ROOM INSTRUMENT OR DEVICE IS ACCESSIBLE TO THE OPERATOR WHEN THE PARAMETER IS DISPLAYED ON A CRT (SOFTWARE) OR VISUALLY DISPLAYED (HARDWARE).
INSTRUMENT LINE SYMBOLS
INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
PNEUMATIC SIGNAL
ELECTRIC SIGNAL
HYDRAULIC SIGNAL
CAPILLARY TUBE
RADAR, SONIC SIGNAL, OR CONDUCTIVITY PROBE
RADAR OR SONIC SIGNAL (NOT GUIDED)
INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
MECHANICAL LINK
TYP. INSTRUMENT TO PROCESS CONNECTIONS (ANY VARIABLES)
DIRECT CONNECTION
CAPILLARY FILLED SYSTEM WITH DIAPHRAGM SEAL
IN-LINE DEVICE
ELECTROMAGNETIC OR SONIC
DIRECT CONNECTION WITH PURGE (AIR) NOTE 10
ISA
ATTACHED TO PROCESS PIPE BUT DOES NOT PENETRATE
FUNCTION SYMBOLS
INTEGRATE
SQUARE ROOT EXTRACTOR
GAIN OR ATTENUATE (INPUT:OUTPUT)
ADD OR SUMMATION
AVG AVERAGE
DIFFERENCE
DIVIDE
MULTIPLY
f(x) CHARACTERIZE
LOW SELECTOR
HIGH SELECTOR
BIAS
REV REVERSE
DIR DIRECT
MATHEMATIC CALCULATION FUNCTION
SEL SELECT
ASD ADJUSTABLE SPEED DRIVE
MISCELLANEOUS SYMBOLS AND EXAMPLES
PILOT LIGHT
SIGNALCONTINUATION ON THE SAME DRAWING. THE POINTER ON THE CIRCLE INDICATES THE DIRECTION. THE PAIR POINTS ON THE DRAWING.
DAMPENER
XT
CCTV CAMERA
RAH
HORN (NOTE 16)
RLH
LIGHT
FLOW
FT FE
FLOW ORIFICE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER (CORNER TAPS, FLANGE TAPS OR PIPE TAPS) (SEE 24590-WTP-M6-50-00004)
VENTURI TUBE OR FLOW NOZZLE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER
SINGLE PORT PITOT OR PITOT - VENTURI TUBE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER
AVERAGING PITOT TUBE WITH DIFFERENTIAL TYPE FLOW TRANSMITTER
FQI
- LOCAL ONLY -
POSITIVE DISPLACEMENT FLOW TOTALIZER
TURBINE OR PROPELLER TYPE FLOW TRANSMITTER (TRANSMITTER INTEGRAL TO FLOW ELEMENT)
NOTE 18
VORTEX OR SWIRL METER MULTI-VARIABLE TYPE FLOW TRANSMITTER (TRANSMITTER INTEGRAL TO FLOW ELEMENT)
VORTEX OR SWIRL METER TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED)
FI
VARIABLE AREA FLOW INDICATOR WITH INTEGRAL VALVE
VARIABLE AREA FLOW TRANSMITTER WITH INTEGRAL VALVE
VARIABLE AREA FLOW INDICATOR WITHOUT INTEGRAL VALVE
VARIABLE AREA FLOW TRANSMITTER WITHOUT INTEGRAL VALVE
MAGNETIC TYPE FLOW TRANSMITTER (TRANSMITTER INTEGRAL TO FLOW ELEMENT)
MAGNETIC TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED)
NOTE 18
CORIOLIS MULTI-VARIABLE TYPE FLOW TRANSMITTER (TRANSMITTER INTEGRAL TO FLOW ELEMENT)
CORIOLIS TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED)
NOTE 17
THERMAL TYPE FLOW ELEMENT (TRANSMITTER REMOTE MOUNTED) REPLACE FT WITH FS FOR SWITCH
FG
FLOW SIGHT GLASS
FLOW (CONT.)
FX
FLOW STRAIGHTENER
INTEGRAL
INTEGRAL FLOW ORIFICE ASSEMBLY WITH DIFFERENTIAL TRANSMITTER (ONE SINGLE UNIT)
LEVEL
GAUGE GLASS, EXTERNAL FLOAT OR DISPLACEMENT TYPE LEVEL INSTRUMENT
DIFFERENTIAL PRESSURE PRESSURIZED TANK
DIFFERENTIAL PRESSURE ATMOSPHERE TANK (NOTE 4)
DIFFERENTIAL PRESSURE LEVEL MEASUREMENT BUBBLER TYPE
TYPE MOUNTED ON SIDE OF TANK. INTERNAL FLOAT DISPLACER
TYPE MOUNTED ABOVE TANK (NUMBER OF DISPLACERS OPTIONAL), INTERNAL FLOAT OR DISPLACER
PROBE TYPE (DIP TUBE, CONDUCTIVE, CAPACITANCE, ETC) MOUNTED ABOVE TANK (NUMBER OF PROBES IS OPTIONAL)
PRESSURE
PI
PDI
DIRECT - CONNECTED
DIRECT - CONNECTED
WITH REMOTE DIAPHRAGM SEAL PIPE MOUNTED
WITH REMOTE MOUNTED FLUSH DIAPHRAM SEAL
TEST POINTS
AE ANALYTICAL POINT NOTE 13
FE FLOW POINT NOTE 13
AW SAMPLE PROBE NOTE 13
PP PRESSURE POINT NOTE 14
TP TEMPERATURE POINT NOTES 13, 14
TP
PP
TEMPERATURE & PRESSURE POINT NOTES 13, 14
SELF - ACTUATED DEVICES - PRESSURE
SET @ XXX PSIG
PCV
PDCV
PSV
PSE
NOTE 20
PRESSURE REDUCING REGULATOR, SELF-CONTAINED
PRESSURE REDUCING REGULATOR, WITH EXTERNAL PRESSURE TAP
DIFFERENTIAL PRESSURE REDUCING REGULATOR, WITH INTERNAL AND EXTERNAL PRESSURE TAPS
BACKPRESSURE REGULATOR SELF-CONTAINED
BACKPRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP
PRESSURE RELIEF OR SAFETY VALVE, ANGLE PATTERN, SPRING OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT
VACUUM RELIEF VALVE, ANGLE PATTERN, SPRING OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT
RUPTURE DISK FOR VACUUM RELIEF
RUPTURE DISK FOR PRESSURE RELIEF
SELF-ACTUATED DEVICES-FLOW
FCV
NOTE 20
FLOW REGULATOR SELF-CONTAINED
SELF-ACTUATED DEVICES-LEVEL
LCV
NOTE 20
LEVEL REGULATOR WITH MECHANICAL LINKAGE
SELF-ACTUATED DEVICES-TEMPERATURE
TCV
NOTE 20
TEMPERATURE REGULATOR, FILLED-SYSTEM TYPE
SOLENOID OPERATED PILOT VALVE - TYPICAL SYMBOLS
ISA, PSA
VENT
MOTOR OPERATED ROTARY VALVE
YC
YV
ANALYSIS AND RADIATION
AT
AE
O_2
FLOW - THROUGH TYPE (EXAMPLE FOR OXYGEN ANALYZER)
GREAT SAMPLER TYPE RETURN TO PROCESS
RT
RE
RX
NOTE 12
RADIATION ALPHA, BETA OR GAMMA MONITOR LIQUID PROCESS INDICATION (INLINE)
RADIATION GAMMA MONITOR LIQUID PROCESS INDICATION
VALVES - ACTUATORS
DIAPHRAGM SPRING OPPOSED
DIAPHRAGM PRESSURE BALANCED
ROTARY MOTOR (SHOWN TYPICALLY WITH ELECTRIC SIGNAL)
PNEUMATIC CYLINDER SINGLE-ACTING, SPRING OPPOSED
HYDRAULIC CYLINDER DOUBLE-ACTING
PNEUMATIC CYLINDER DOUBLE-ACTING
SINGLE SOLENOID
SINGLE SOLENOID (SHOWN WITH MANUAL RESET)
ELECTRO-HYDRAULIC
ELECTRO-PNEUMATIC
HAND ACTUATOR (MOUNTED AT TOP, SIDE OR BOTTOM OF ACTUATED DEVICE AS APPLICABLE)
UNASSIGNED (TYPE OF ACTUATOR TO BE WRITTEN ADJACENT TO THE SYMBOL)
VALVE WITH INTEGRAL ELECTRO-PNEUMATIC (E/P) POSITIONER
PNEUMATIC CYLINDER SINGLE-ACTING, SPRING OPPOSED (DUAL VALVE)
TEMPERATURE
TT
TE
NOTE 8
IN LINE TEMPERATURE ELEMENT WITH REMOTE TRANSMITTER
IN LINE TEMPERATURE ELEMENT WITH INTEGRAL TRANSMITTER
VESSEL
VESSEL TEMPERATURE ELEMENT WITH TRANSMITTER
TI
LOCAL TEMPERATURE INDICATOR
RESISTANCE TEMPERATURE DETECTOR (RTD) OR THERMOCOUPLE (T/C)
SURFACE MOUNTED TEMPERATURE ELEMENT
TW
THERMOWELL
EXPIRES 07/28/09
10/12/07

NOTES:

1. THE SYMBOLS AND LEGENDS SHOWN ARE BASED ON ISA STANDARD, ANSI/ISA-S5.1-1984 R1992 "INSTRUMENTATION SYMBOLS AND IDENTIFICATION" AND STANDARD ISA-S5. 3-1983 "GRAPHIC SYMBOLS FOR DISTRIBUTED CONTROL/SHARED DISPLAY INSTRUMENTATION, LOGIC AND COMPUTER SYSTEMS".
2. DELETED.
3. TEXT LOCATION AROUND INSTRUMENTATION SYMBOLS ARE:

   J4, J3, J1, Z, J2, J5, NOTE _

   J1: INSTRUMENT FUNCTION CODE, E.G., PDSH

   J2: UNIQUE LOOP NUMBER

   J3: FUNCTION (E.G. [√]) OR DEVICE DESIGNATION (I/P, P/I, I/I, P/H, ETC.)

   Z: DESIGNATES SAFETY ITEM WHERE THE SAFETY CLASS SHALL BE DEFINED AS SC OR SS AND QUALITY LEVEL Q.

   J4: PIL CIN - ASSOCIATES CIS DATABASE ENTRY WITH GRAPHIC (NORMALLY TRANSPARENT ON P&IDs).

   J5: ALPHA SYSTEM NUMBER, NORMALLY TRANSPARENT ON P&ID. EXCEPTION IS DIFFERENT SYSTEM NUMBER ON A GIVEN SYSTEM P&ID.

   NOTE _: A NOTE SHOULD BE ADDED IF THE INSTRUMENT PERFORMS AN AIR PERMIT FUNCTION.
4. THE UPPER IMPULSE LINE IS OMITTED IF LEVEL IS MEASURED USING ATMOSPHERIC PRESSURE AS REFERENCE.
5. NORMAL OPERATION MEANS PLANT EQUIPMENT IS IN OPERATING MODE FOR A CONTINUOUS OR BATCH PROCESS.
6. EXAMPLES OF USE OF TANGENTIAL INSTRUMENT CIRCLES TO DENOTE A SINGLE INSTRUMENT WITH TWO VARIABLES AND/OR TWO FUNCTIONS:

   TWO VARIABLES - "TT" FOR TOP BALLOON AND "FT" IN THE BOTTOM - MULTI-VARIABLE VORTEX FLOW METER.

   TWO FUNCTIONS - "LT" FOR TOP BALLOON AND "LC" IN THE BOTTOM - A DUAL FUNCTION LEVEL INSTRUMENT, ONE A TRANSMITTER, ONE A CONTROLLER.
7. INSTRUMENT NUMBERS ON P&IDs LIST THE INSTRUMENT FUNCTION CODE AND THE UNIQUE LOOP IDENTIFIER.
8. THERMOWELL INFERRED (NOT TO BE SHOWN).
9. MAIN CONTROL ROOM SYMBOLOGY SAME AS FOR INDIVIDUAL FACILITY CONTROL ROOM AND STAND-BY CONTROL ROOM.
10. THE FOLLOWING ABBREVIATIONS ARE SUGGESTED TO DENOTE THE TYPES OF POWER SUPPLY AND PURGE FLUID:
    * ISA/PSA - AIR SUPPLY
    * ES - ELECTRIC SUPPLY
    * WS - WATER SUPPLY
    * NS - NITROGEN SUPPLY
    * GS - GAS SUPPLY
11. DELETED
12. RX - SHIELDING (IN THIS USAGE ONLY).
13. A TEST POINT IS A PROCESS CONNECTION TO WHICH NO INSTRUMENT IS PERMANENTLY CONNECTED, BUT WHICH IS INTENDED FOR TEMPORARY, INTERMITTENT OR FUTURE CONNECTION OF AN INSTRUMENT.
    - AP — ANALYTICAL POINT
    - PP — PRESSURE POINT
    - AW — SAMPLE PROBE
    - TP — TEMPERATURE POINT

    NOTE: TP/PP MAY BE USED IN THE CASE OF A HOT TAP TESTING DEVICE WHERE NO THERMOWELL EXISTS (UTILITY SYSTEM ONLY). WHERE THERMOWELL USED FOR TEST POINT, IT MUST HAVE AN INSTRUMENT TAG.
14. TEST POINTS NOT ASSOCIATED WITH AN INSTRUMENT TAG.
15. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
16. FOR OTHER AUDIBLE ALARM DEVICE REPLACE "HORN" WITH APPROPRIATE NAME OF DEVICE.
17. FOR INTEGRAL INSTRUMENTS, THE "FE" BUBBLE IS REMOVED AND THE LINE STYLE FROM SYMBOL TO "FT" BUBBLE IS SOLID.
18. THE SOFTWARE TAGS WILL INDICATE THE ADDITIONAL PROCESS VARIABLES MONITORED BY THE MULTI-VARIABLE TRANSMITTER.
19. DELETED
20. PCV, PDCV, FCV, LCV AND TCV VALVE BODY SYMBOL MAYBE SHOWN USING A GENERAL VALVE SYMBOL (GATE) IN ACCORDANCE WITH ISA S5.1, SECTION 6.4 AND 6.6; OR THE VALVE BODY SYMBOL MAYBE SHOWN AS THE SPECIFIC PURCHASED TYPE (I.E. GLOBE, ETC.)
21. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.
22. REVISED PER 24590-WTP-M6N-50-00012, 00017, 00023, 00028, 00039 AND INCORPORATED VARIOUS EDITORIAL COMMENTS.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
2	ISSUED FOR PERMITTING USE	LCS	[illegible]	[illegible]	[illegible]	10/19/07
1	ISSUED FOR PERMITTING USE	TB	BL	DCP	MH	12/13/03
0	ISSUED FOR PERMITTING USE	KC	US	N/A	GD	7-24-02

REVISION HISTORY

ISSUED BY RPP-WTP PDC ISSUE STAMP	PROJECT No.	24590	
	SITE	HANFORD	
	AREA	200E	
	BUILDING No.		
	BY		DATE
ORIGINATOR	K. CHANDRASEKARN		JUL 17, 02
CHECKER	UTPAL SEN		JUL 17, 02
APPROVER	GARTH DUNCAN		7-24-02
REVIEWER	N/A		

CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO EMS INITIAL IF YES

BECHTEL
RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354
CONTRACT No: DE-AC27-01RV14136

P&ID SYMBOLS AND LEGEND SHEET 3 OF 8

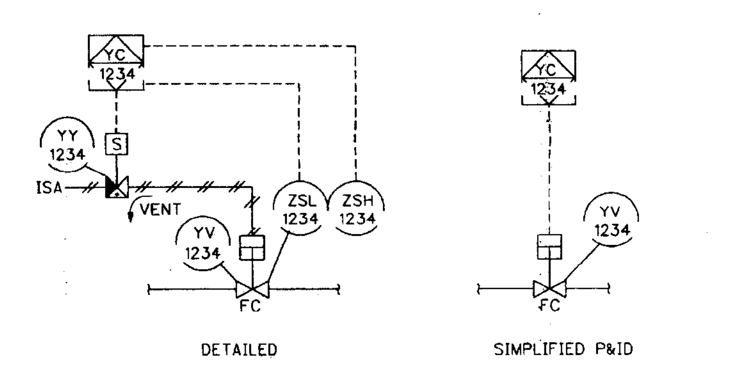
SCALE:

24590-WTP-M6-50-P0003 REV 2

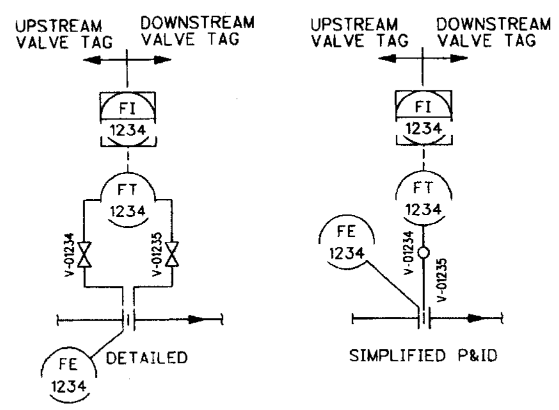
INSTRUMENT CODE LETTER IDENTIFICATION

FIRST LETTER | SUCCEEDING LETTERS (* FUNCTION IDENTIFIER COMBINATION IS NOT USED - NOTE 13)

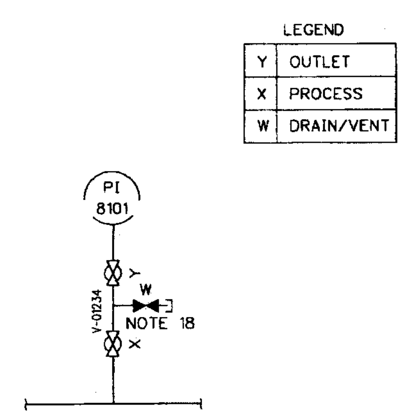
MEASURED OR INITIATING VARIABLE (NOTE 1)	SYMBOL	SENSING DEVICE		DISPLAY DEVICE (NOTE 2)								CONTROL DEVICE						SWITCH					MISCELLANEOUS DEVICE		
		PRIMARY ELEMENT	BLIND TRANSMITTER (NOTE 9)	INDICATOR	RECORDER	INTEGRATING INDICATOR	ALARM HIGH	ALARM HIGH HIGH	ALARM LOW	ALARM LOW LOW	ALARM HIGH LOW (COMB)	CONTROL STATION	CONTROLLER (NOTE 15)	CONTROL DAMPER (NOTE 12)	SELF-ACTUATED VALVE	CONTROL VALVE	FINAL CONTROL ELEMENT (NOTE 5)	HIGH	HIGH HIGH	LOW	LOW LOW	HIGH LOW (COMB)	LOCAL OBSERVATION GLASS	TEST POINT (NOTE 8)	RELAY/ COMPUTE
TYPICAL SYMBOLS	( )	( )E	( )T	( )I	( )R	(Q)I	( )AH	( )AHH	( )AL	( )ALL	( )AHL	( )K	( )C	( )D	( )CV	( )V	( )Z	( )SH	( )SHH	( )SL	( )SLL	( )SHL	( )G	( )P	( )Y
ANALYSIS (NOTE 3)	A	AE	AT	AI	AR	*	AAH	AAHH	AAL	AALL	AAHL	AK	AC	*	*	AV	AZ	ASH	ASHH	ASL	ASLL	ASHL	*	AP	AY
BURNER COMBUSTION (NOTE 7)	B	BE	BT	BI	BR	*	*	BAHH	BAL	BALL	*	*	BC	BD	*	*	*	BSH	BSHH	BSL	BSLL	BSHL	BG	BP	BY
CONDUCTIVITY	C	CE	CT	CI	CR	*	CAH	CAHH	CAL	CALL	CAHL	CK	*	*	*	CV	CZ	CSH	CSHH	CSL	CSLL	CSHL	*	CP	CY
DENSITY	D	DE	DT	DI	DR	*	DAH	DAHH	DAL	DALL	DAHL	DK	DC	*	*	DV	DZ	DSH	DSHH	DSL	DSLL	DSHL	*	DP	DY
VOLTAGE (EMF)	E	EE	ET	EI	ER	*	EAH	EAHH	EAL	EALL	EAHL	EK	EC	*	*	*	EZ	ESH	ESHH	ESL	ESLL	ESHL	*	*	EY
FLOW RATE (NOTE 6)	F	FE	FT	FI	FR	FQI	FAH	FAHH	FAL	FALL	FAHL	FK	FC	FD	*	FV	FZ	FSH	FSHH	FSL	FSLL	FSHL	FG	FP	FY
FLOW RATIO	FF	FE	FT	FFI	FFR		FFSH		FFSL			FFK	FFC		*			FFSH	FFSHH	FFSL	FFSLL	FFSHL			
HAND (MANUAL)	H	*	*	*	*	*	*	*	*	*	*	HK	HC	HD	HCV	HV	HZ	*	*	*	*	HS	*	*	HY
CURRENT	I	IE	IT	II	IR	*	IAH	IAHH	IAL	IALL	IAHL	IK	IC	*	*	*	IZ	ISH	ISHH	ISL	ISLL	ISHL	*	*	IY
POWER	J	JE	JT	JI	JR	JQI	JAH	JAHH	JAL	JALL	JAHL	JK	JC	*	*	*	JZ	JSH	JSHH	JSL	JSLL	JSHL	*	*	JY
TIME	K	*	KT	KI	*	KQI	KAH	KAHH	KAL	KALL	KAHL	*	KC	*	*	*	KZ	KSH	KSHH	KSL	KSLL	KSHL	*	*	KY
LEVEL	L	LE	LT	LI	LR	*	LAH	LAHH	LAL	LALL	LAHL	LK	LC	*	LCV	LV	LZ	LSH	LSHH	LSL	LSLL	LSHL	LG	LP	LY
MOISTURE	M	ME	MT	MI	MR	*	MAH	MAHH	MAL	MALL	MAHL	MK	MC	MD	*	MV	MZ	MSH	MSHH	MSL	MSLL	MSHL	*	MP	MY
PRESSURE OR VACUUM	P	PE	PT	PI	PR	*	PAH	PAHH	PAL	PALL	PAHL	PK	PC	*	PCV	PV	PZ	PSH	PSHH	PSL	PSLL	PSHL	*	PP	PY
PRESSURE DIFFERENTIAL	PD	*	PDT	PDI	PDR	*	PDAH	PDAHH	PDAL	PDALL	*	PDK	PDC	*	PDCV	PDV	PDZ	PDSH	PDSHH	PDSL	PDSLL	PDSHL	*	PP	*
QUANTITY OR EVENT	Q	QE	QT	QI	QR	QQI	QAH	QAHH	QAL	QALL	QAHL	QK	QC	*	*	*	QZ	QSH	QSHH	QSL	QSLL	QSHL	*	*	QY
RADIOACTIVITY	R	RE	RT	RI	RR	RQI	RAH	RAHH	RAL	RALL	RAHL	RK	RC	*	*	RV	RZ	RSH	RSHH	RSL	RSLL	RSHL	*	*	RY
SPEED OR FREQUENCY	S	SE	ST	SI	SR	*	SAH	SAHH	SAL	SALL	SAHL	SK	SC	*	*	*	SZ	SSH	SSHH	SSL	SSLL	SSHL	*	*	SY
TEMPERATURE	T	TE	TT	TI	TR	*	TAH	TAHH	TAL	TALL	TAHL	TK	TC	TD	TCV	TV	TZ	TSH	TSHH	TSL	TSLL	TSHL	*	TP	TY
TEMPERATURE DIFFERENTIAL	TD	*	*	TDI	TDR	*	TDAH	TDAHH	TDAL	TDALL	*	*	TDC	*	TDCV	TDV	TDZ	TDSH	TDSHH	TDSL	TDSLL	TDSHL	*	*	*
MULTI-VARIABLE	U	*	*	UI	UR	*	UAH	UAHH	UAL	UALL	UAHL	*	UC	*	*	UV	UZ	USH	USHH	USL	USLL	USHL	*	*	UY
VIBRATION/MACH ANALYSIS	V	VE	VT	VI	VR	*	VAH	VAHH	VAL	VALL	VAHL	VK	VC	*	*	*	VZ	VSH	VSHH	VSL	VSLL	VSHL	*	VP	VY
WEIGHT, FORCE, TORQUE	W	WE	WT	WI	WR	WQI	WAH	WAHH	WAL	WALL	WAHL	WK	WC	*	*	*	WZ	WSH	WSHH	WSL	WSLL	WSHL	*	*	WY
USER DEFINED (NOTE 10)	X	XE	XT	XI	XR	XQI	XAH	XAHH	XAL	XALL	XAHL	XK	XC	XD	*	XV	XZ	XSH	XSHH	XSL	XSLL	XSHL	XG	XP	XY
EVENT/STATE OR PRESENCE (NOTE 15)	Y	YE	YT	YI	YR	*	*	*	*	*	*	*	YC	*	*	YV	YZ	YSH	YSHH	YSL	YSLL	YSHL	*	YP	YY
POSITION (NOTE 4)	Z	ZE	ZT	ZI (L)	ZR	*	ZAH	ZAHH	ZAL	ZALL	ZAHL	*	ZC	*	*	*	ZZ	ZSH	ZSHH	ZSL	ZSLL	ZSHL	*	*	ZY



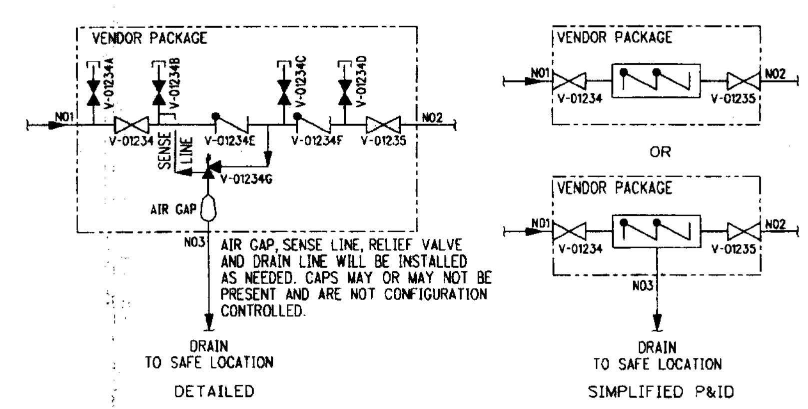
TYPICAL OPEN/CLOSE VALVE CONTROL



PARALLEL ROOT VALVE DETAIL

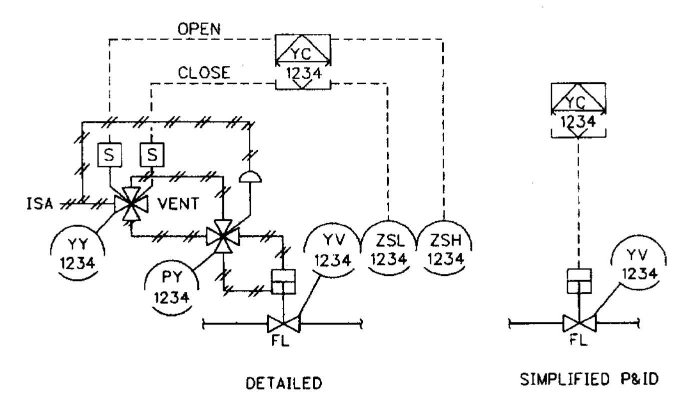


HIGH PRESSURE/TEMPERATURE THREE WAY ROOT VALVES

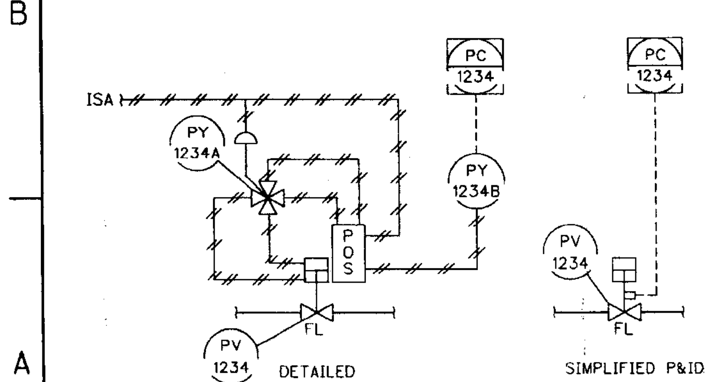


BACKFLOW PREVENTER

NOTE 18



TYPICAL FAIL LAST ON-OFF VALVE



TYPICAL FAIL LAST CONTROL VALVE

NOTES:

1. THE INSTRUMENT LEGEND IS BASED ON ISA-S5.1-1984, INSTRUMENTATION SYMBOLS AND IDENTIFICATION STANDARD (ISA). EXCEPTIONS SPECIFIC TO RPP-WTP ARE NOTED IN THIS LEGEND: REFER TO THE ISA STANDARD FOR FURTHER DETAILS AND CLARIFICATION. THE COMPONENT FUNCTIONAL IDENTIFIER FOR AN INSTRUMENT CONSISTS OF LETTERS DERIVED FROM THE INSTRUMENT LEGEND SHEET AND THESE NOTES. THE FIRST LETTER IS SELECTED ACCORDING TO MEASURED OR INITIATION VARIABLE. SUCCEEDING LETTERS IDENTIFY FUNCTIONS PERFORMED. MODIFYING LETTER MAY BE USED TO MODIFY EITHER A FIRST LETTER OR SUCCEEDING LETTERS AS APPLICABLE.
2. PILOT OR INDICATOR LIGHTS ARE NORMALLY NOT SHOWN ON P&IDs. ESPECIALLY THOSE LIGHTS ASSOCIATED WITH HAND SWITCHES. HOWEVER, THE FOLLOWING EXCEPTIONS APPLY:
   - WHEN A PILOT LIGHT IS PART OF AN INSTALLED LOOP, IT SHOULD BE DESIGNATED BY A FIRST LETTER, FOLLOWED BY THE SUCCEEDING LETTER "L".
   - STATUS INDICATOR LIGHTS ASSOCIATED WITH VALVE STATUS SWITCHES USED IN FIRE SYSTEM, MAY USE THE DESIGNATION "ZL".
   - SPECIFIC CASES WHERE THE PILOT LIGHT IS ESSENTIAL FOR EXPLAINING SPECIAL FUNCTION OR LOCATION OF THE LIGHT. ALSO USED AS VALVE LIMIT SWITCH INDICATION IN PROGRAMMABLE ELECTRONIC SYSTEM (PES).
3. WHEN "A" IS USED FOR ANALYSIS VARIABLES NOT ASSIGNED FIRST LETTER DESIGNATORS, THE FOLLOWING TERMS MAY BE PLACED OUTSIDE THE INSTRUMENT CIRCLE TO DENOTE THE SPECIFIC MEASURED VARIABLES, FOR EXAMPLE:
   - H —DISSOLVED HYDROGEN
   - NO_X—NITROGEN OXIDE
   - H_2—GASEOUS HYDROGEN
   - pH —pH
   - Na—SODIUM
   - TRB—TURBIDITY
4. MODIFYING LETTERS "H" HIGH AND "L" LOW SHALL HAVE THE FOLLOWING MEANING: (EXAMPLES GIVEN WITH POSITION SWITCH, ZS).
   - ZSH - HIGH, UP, RAISED, OPEN, EXTENDED ON, ENERGIZED, VERTICAL, INFLATED.
   - ZSL - LOW, DOWN, LOWERED, CLOSED, RETRACTED, OFF, HORIZONTAL, DEFLATED.
5. THE LETTER "Z" WHICH FOLLOWS A MEASURED VARIABLE REPRESENTS FINAL CONTROL ELEMENT, OTHER THAN CONTROL VALVES, SUCH AS HYDRAULIC COUPLING, ADJUSTABLE SPEED MOTOR/DEVICE, ETC.
6. "FO" DESIGNATES FLOW RESTRICTION ORIFICE.
7. BURNER/COMBUSTION "B" SHALL BE USED FOR ALL FIRE PROTECTION AND BURNER/COMBUSTION APPLICATIONS.
8. A TEST POINT IS A PROCESS CONNECTION TO WHICH NO INSTRUMENT IS PERMANENTLY CONNECTED, BUT WHICH IS INTENDED FOR TEMPORARY, INTERMITTENT OR FUTURE CONNECTION OF AN INSTRUMENT.
   - AP —ANALYTICAL POINT
   - PP —PRESSURE POINT
   - AW—SAMPLE PROBE
   - TP —TEMPERATURE POINT
9. INTEGRAL INDICATORS WILL BE PROVIDED WITH TRANSMITTERS ONLY WHEN SPECIFIED ON THE APPLICABLE INSTRUMENT DATA SHEET.
10. EXAMPLES OF EQUIPMENT USING "X" INCLUDE BARCODE OR OPTICAL CHARACTER RECOGNITION (OCR) SYSTEMS, TELEVISION SYSTEMS, PHOTOCELL, ETC.
11. DELETED
12. THE DESIGNATION "D" REPRESENTS HVAC CONTROL DAMPERS.
13. ANY FIRST LETTER, WHEN COMBINED WITH MODIFYING LETTER "F" (RATIO), "M" (MOMENTARY), "Q" (TOTALIZER) OR "K" (TIME RATE OF CHANGE), REPRESENTS A SINGLE MEASURED VARIABLE AND IS CONSIDERED THE SAME AS A FIRST LETTER ONLY VARIABLE.
14. USING "X" AS A MODIFIER DESIGNATES AN ACCESSORY PURCHASED WITH AN INSTRUMENT SYSTEM, SUCH AS A SAMPLE CONDITIONING SYSTEM.
15. USE OF "C" (FOR A SUCCEEDING LETTER) IS PERMITTED FOR DIGITAL ON/OFF CONTROL FOR A "YC" TAG. IN ALL OTHER CASES "C" SHOULD BE RESERVED FOR PROPORTIONAL, DERIVATIVE, INTEGRAL (P&ID) TYPE FUNCTION.
16. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
17. DELETED
18. VALVE BODY SYMBOL MAY BE SHOWN USING A GENERAL VALVE SYMBOL (GATE) IN ACCORDANCE WITH ISA S5.1, SECTION 6.4; OR THE VALVE BODY SYMBOL MAY BE SHOWN AS THE SPECIFIC PURCHASED TYPE (i.e. BALL, NEEDLE, ETC.). VALVES MAY BE SHOWN NORMALLY CLOSED IF THE INSTRUMENT IS NOT CONTINUALLY IN USE.
19. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.
20. REVISED PER 24590-WTP-M6N-50-00033, 00039, 00040, 00041 AND INCORPORATED VARIOUS EDITORIAL COMMENTS.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
2	ISSUED FOR PERMITTING USE	LCS	[illegible]	CDR	XCL	10/14/07
1	ISSUED FOR PERMITTING USE	TB	BL	DCP	MH	12/12/03
0	ISSUED FOR PERMITTING USE	FR	JG	N/A	GD	7/24/02

REVISION HISTORY

ISSUED BY RPP-WTP PDC

ISSUE STAMP

PROJECT No.	24590
SITE	HANFORD
AREA	200E
BUILDING No.	

	BY	DATE
ORIGINATOR	K. CHANDRASEKARN	7/17/02
CHECKER	UTPAL SEN	7/17/02
APPROVER	GARTH DUNCAN	7/24/02
REVIEWER	N/A	

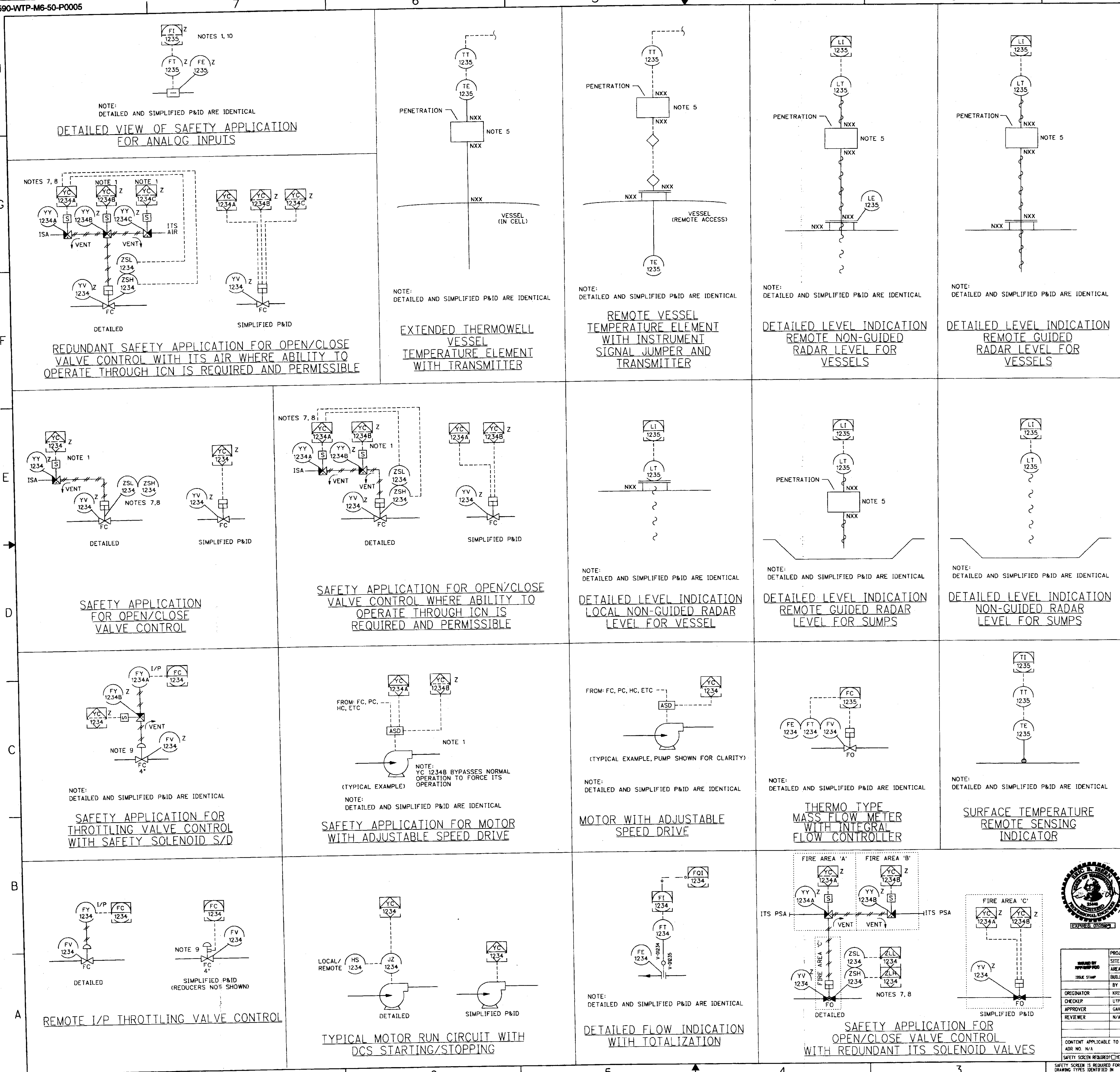
CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO EMNS INITIAL IF YES ____

BECHTEL
RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID SYMBOLS AND LEGEND SHEET 4 OF 8

SCALE:
24590-WTP-M6-50-P0004
REV 2


NOTE:
DETAILED AND SIMPLIFIED P&ID ARE IDENTICAL
DETAILED VIEW OF SAFETY APPLICATION FOR ANALOG INPUTS
EXTENDED THERMOWELL VESSEL TEMPERATURE ELEMENT WITH TRANSMITTER
REMOTE VESSEL TEMPERATURE ELEMENT WITH INSTRUMENT SIGNAL JUMPER AND TRANSMITTER
DETAILED LEVEL INDICATION REMOTE NON-GUIDED RADAR LEVEL FOR VESSELS
DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR VESSELS
DETAILED
SIMPLIFIED P&ID
REDUNDANT SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL WITH ITS AIR WHERE ABILITY TO OPERATE THROUGH ICN IS REQUIRED AND PERMISSIBLE
SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL
SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL WHERE ABILITY TO OPERATE THROUGH ICN IS REQUIRED AND PERMISSIBLE
DETAILED LEVEL INDICATION LOCAL NON-GUIDED RADAR LEVEL FOR VESSEL
DETAILED LEVEL INDICATION REMOTE GUIDED RADAR LEVEL FOR SUMPS
DETAILED LEVEL INDICATION NON-GUIDED RADAR LEVEL FOR SUMPS
SAFETY APPLICATION FOR THROTTLING VALVE CONTROL WITH SAFETY SOLENOID S/D
NOTE: YC 1234B BYPASSES NORMAL OPERATION TO FORCE ITS OPERATION
(TYPICAL EXAMPLE)
SAFETY APPLICATION FOR MOTOR WITH ADJUSTABLE SPEED DRIVE
(TYPICAL EXAMPLE, PUMP SHOWN FOR CLARITY)
MOTOR WITH ADJUSTABLE SPEED DRIVE
THERMO TYPE MASS FLOW METER WITH INTEGRAL FLOW CONTROLLER
SURFACE TEMPERATURE REMOTE SENSING INDICATOR
SIMPLIFIED P&ID (REDUCERS NOT SHOWN)
REMOTE I/P THROTTLING VALVE CONTROL
TYPICAL MOTOR RUN CIRCUIT WITH DCS STARTING/STOPPING
DETAILED FLOW INDICATION WITH TOTALIZATION
SAFETY APPLICATION FOR OPEN/CLOSE VALVE CONTROL WITH REDUNDANT ITS SOLENOID VALVES

NOTES:

1. ALL SHARED DISPLAY DEVICES IDENTIFIED AS SAFETY ITEMS WILL INCLUDE SHARED CRT INDICATION ON THE ICN. THE LETTER "Z" REPRESENTS AN INSTRUMENT WIRED TO ITS SHUTDOWN SYSTEM (PPJ) WHERE SHUTDOWN LOGIC EXISTS.

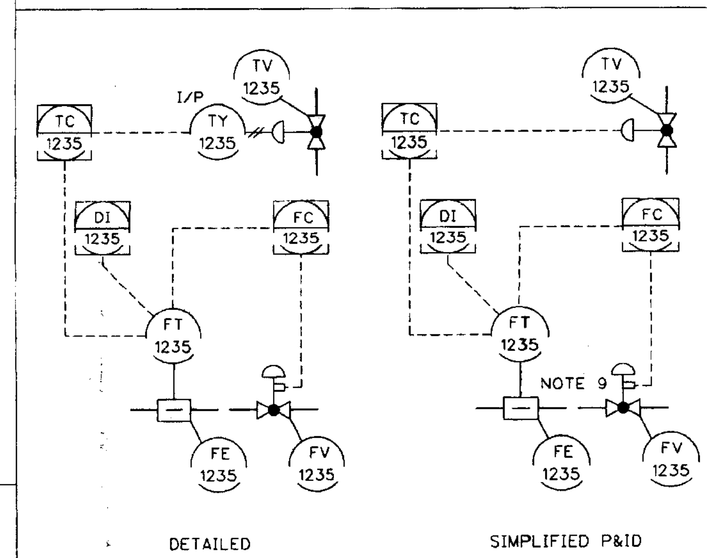
2-3. DELETED

4. DELETED (MOVED TO SHEET 24590-WTP-M6-50-00004)
5. PENETRATION WILL BE DEFINED AND THE BOX WILL ONLY BE USED WHEN APPLICABLE.
6. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
7. LIMIT SWITCHES THAT ARE WIRED TO PPJ SYSTEM MUST BE NOTED ON P&ID.
8. LIMIT SWITCHES WILL BE WIRED TO PCJ SYSTEM.
9. VALVE EITHER DIAPHRAGM OR PISTON ACTUATED. VALVE SIZE SHOWN IF DIFFERENT THAN LINE SIZE.
10. REMOTE TRANSMITTER APPLICATION SHOWN. FOR INTEGRAL INSTRUMENTS, REMOVE "FE" BUBBLE AND MAKE LINE STYLE FROM SYMBOL TO "FT" BUBBLE SOLID.
11. DELETED
12. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.
13. REVISED PER 24590-M6N-50-00014, 00019, 00025, 00034, 00040 AND 00041. ADDED SIZE INDICATION TO CONTROL VALVES AND CLARIFICATION THAT REDUCERS ARE NOT SHOWN. ADDED CLARIFICATION TO ASD'S TO INDICATE PUMP IS SHOWN FOR EXAMPLE ONLY AND INCORPORATED VARIOUS EDITORIAL COMMENTS.

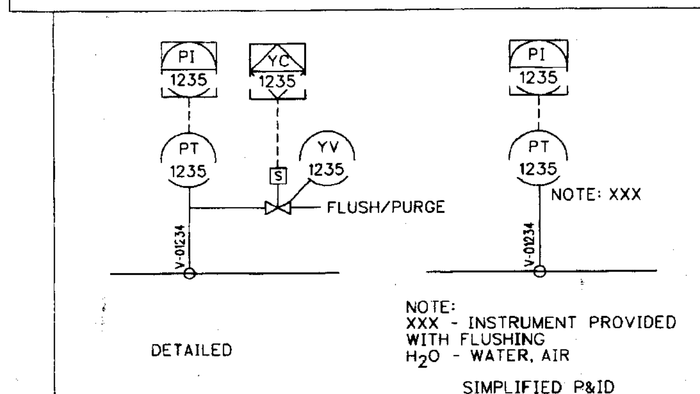
HOLD/OPEN ITEMS:

1-2. DELETED

PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR, AND BYPRODUCT MATERIAL AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.



TEMP/DENSITY/FLOW CORIOLIS TEMP- FLOW CONTROL



PRESSURE WITH AIR/WATER FLUSH

EXPIRES: 07/28/09

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
2	ISSUED FOR PERMITTING USE	LCS	[illegible]	CDR	RCL	10/19/07
1	ISSUED FOR PERMITTING USE	TB	BL	DCP	MH	12/12/03
0	ISSUED FOR PERMITTING USE	KC	US	N/A	GD	7/24/02

REVISION HISTORY

ISSUE STAMP	PROJECT No.	24590
	SITE	HANFORD
	AREA	200E
	BUILDING No.	

	BY	DATE
ORIGINATOR	KRIS CHANDRASKAREN	7/17/02
CHECKER	UTPAL SEN	7/17/02
APPROVER	GARTH DUNCAN	7/24/02
REVIEWER	N/A	

CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO E&NS INITIAL IF YES

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID SYMBOLS AND LEGEND SHEET 5 OF 8

SCALE:

24590-WTP-M6-50-P0005 REV 2

SAFETY SCREEN IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002

'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED

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PLOTTED BY: lcsanvic
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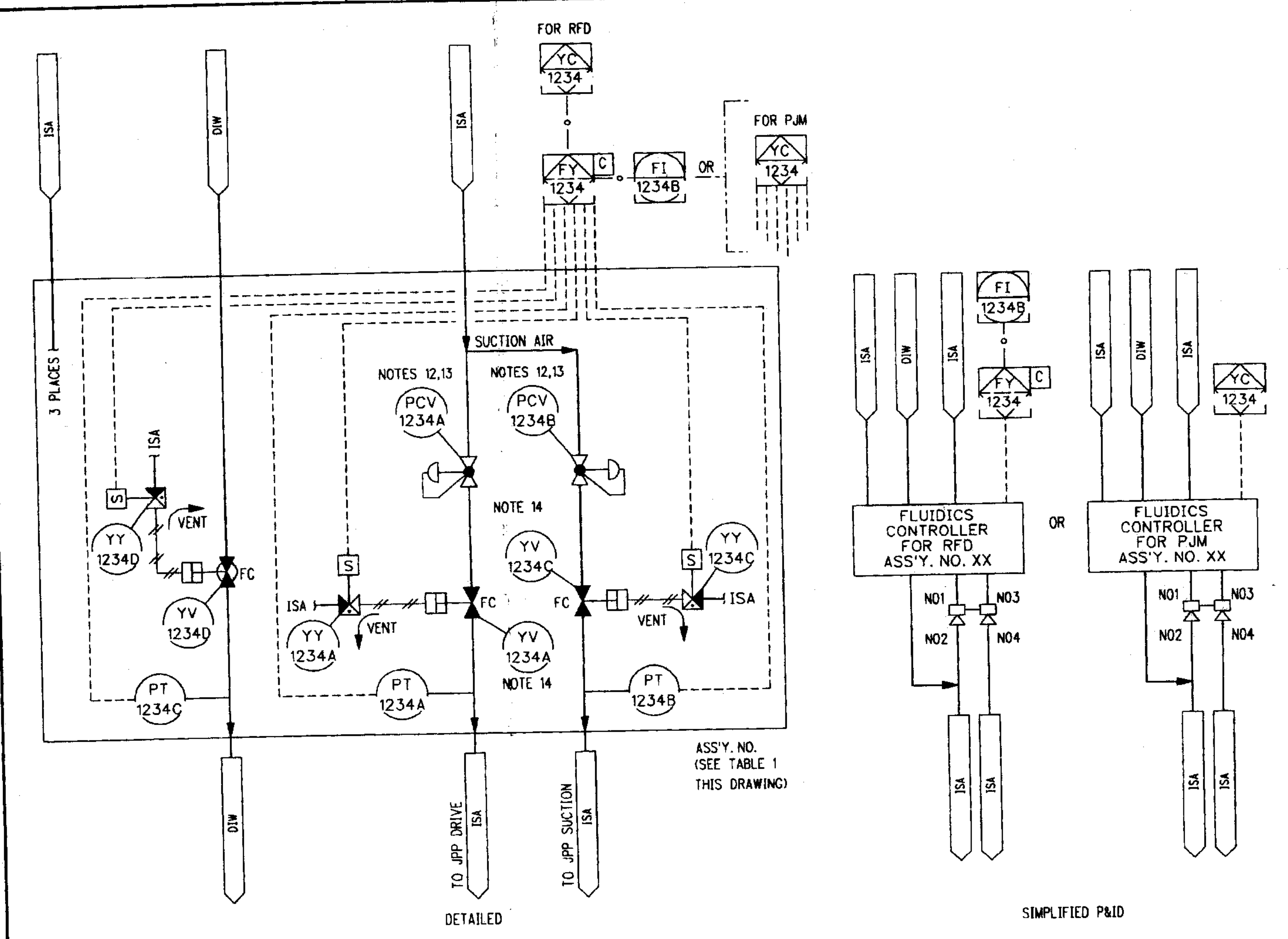
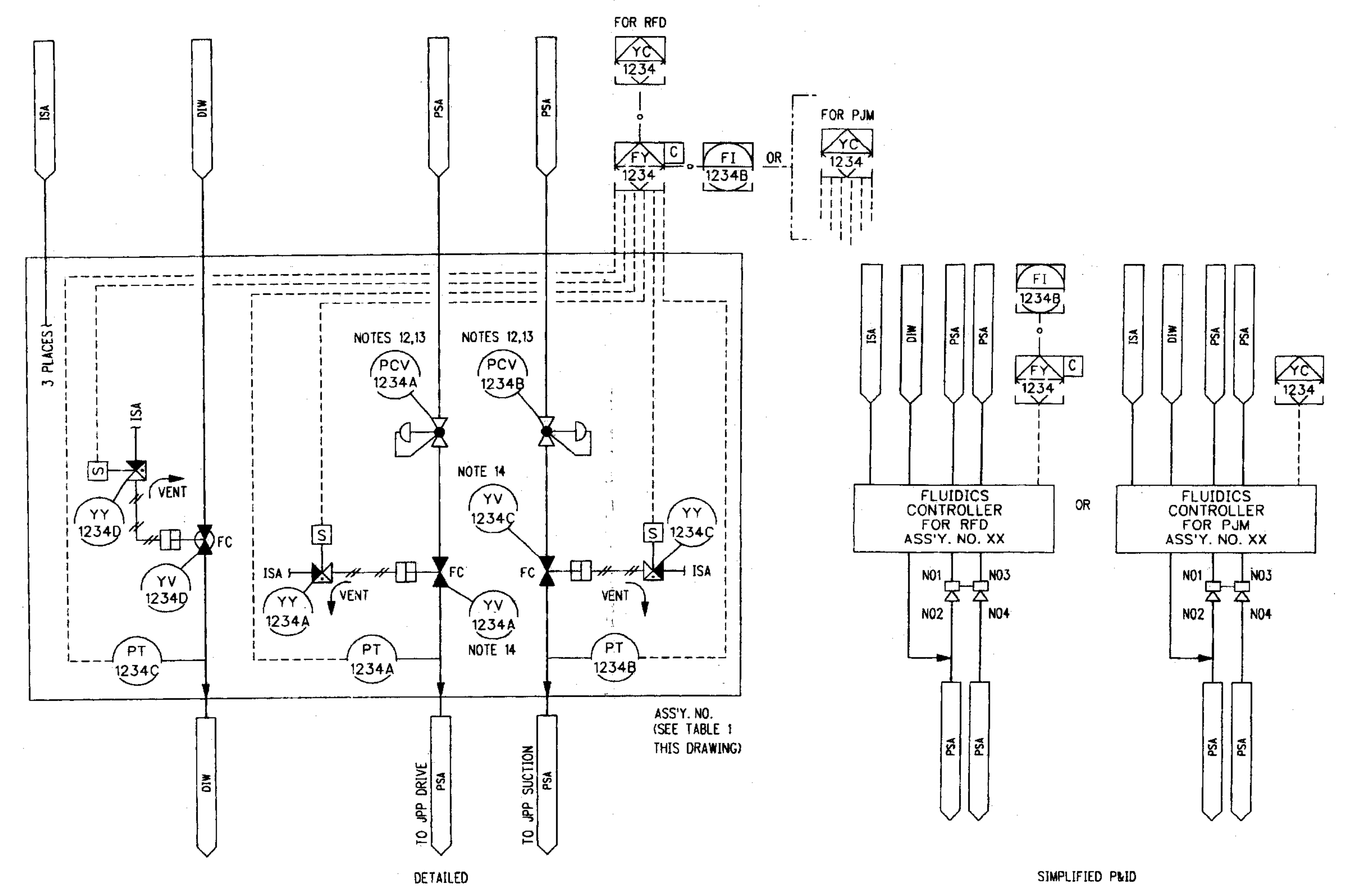
FORM E_SDN.DGN 02/2003



DETAIL 1

TYPICAL HLW ARRANGEMENT
FLUIDICS (RFD/PJM) CONTROLLER
NOTES 1, 2



DETAIL 2

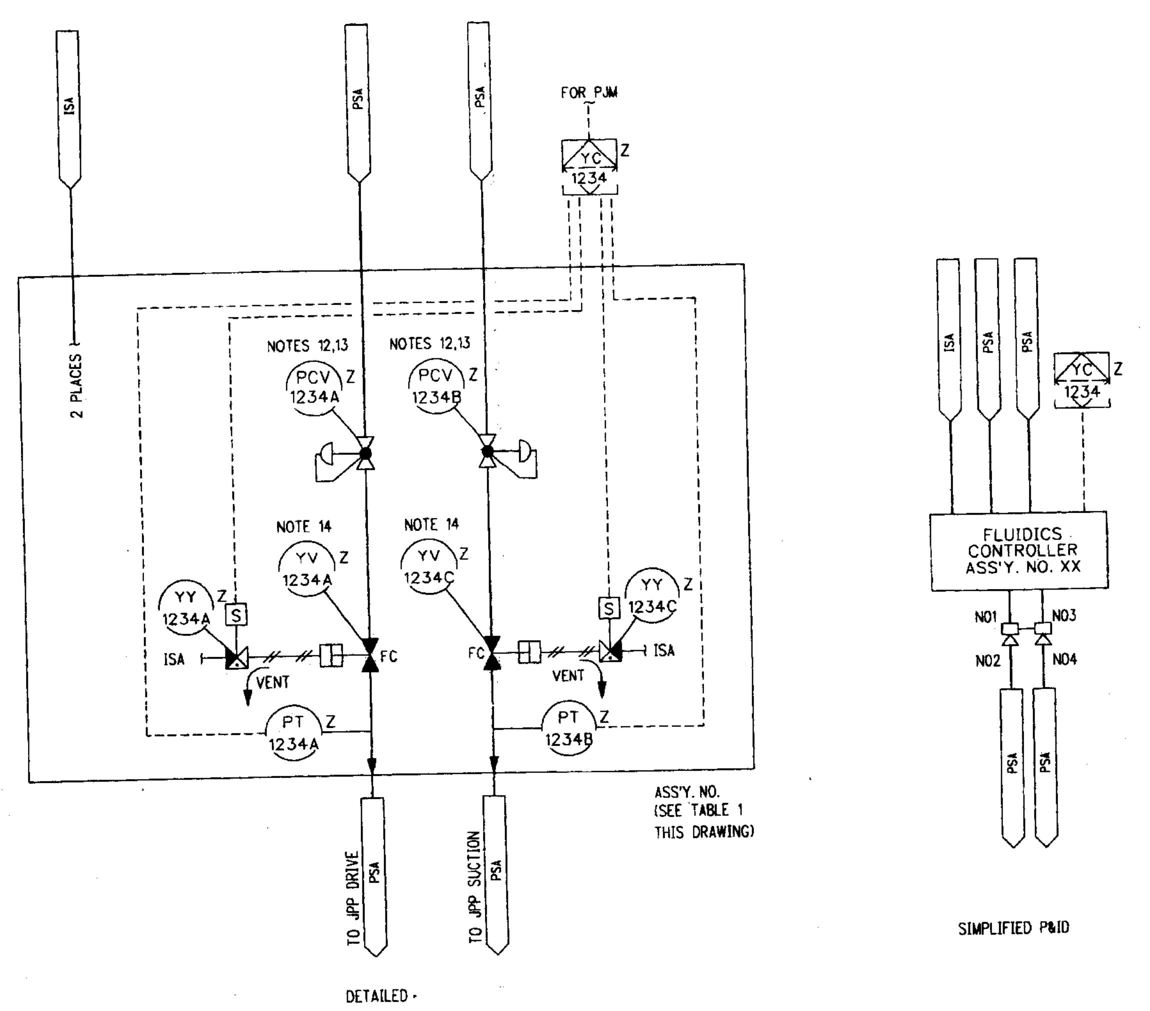
TYPICAL PTF ARRANGEMENT
FLUIDICS (RFD/PJM) CONTROLLER
NOTES 1, 2

NOTES:

1. JUMPERS WILL BE SHOWN ON P&ID IF REQUIRED.
2. ACTUAL SEQUENCE NUMBERS WILL BE SHOWN ON THE P&IDs.
3. FOR USE WITH PJM, THEN NO "A" SUFFIX IS REQUIRED.
4. SHORTEST LEG IS DEFINED AS THE "BALANCE" LEG. (NOZZLE A).
5. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
6. DELETED
7. NOTE BUBBLER TYPES 1, 2, OR 3 ON THE P&ID IS TO IDENTIFY THE FLUSH AND MECHANICAL REQUIREMENTS OF THE INSTRUMENT.
8. DELETED
9. INSTRUMENTATION AND VALVES ARE TAGGED WITH PROCESS SYSTEM IDENTIFIERS.
10. FOR MAIN CONTROLLER, SEE DETAIL 6 ON 24590-WTP-M6-50-00007.
11. DETAIL 3 (REDUNDANT) AND DETAIL 6 (PRIMARY) CONTROLLERS ARE IN SEPARATE FIRE AREAS.
12. SEE SYSTEM DESCRIPTIONS FOR PCV SETPOINT.
13. PCV PROVIDED WITH INTEGRAL OUTLET PRESSURE GAUGE.
14. VALVE TYPE SHOWN IS A GENERAL SYMBOL. ANGLE SEAT VALVES ARE USED FOR RFD/PJM CONTROL APPLICATIONS.
15. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.
16. REVISED PER 24590-WTP-M6N-50-00035, 00038, 00039 AND INCORPORATED VARIOUS EDITORIAL COMMENTS.

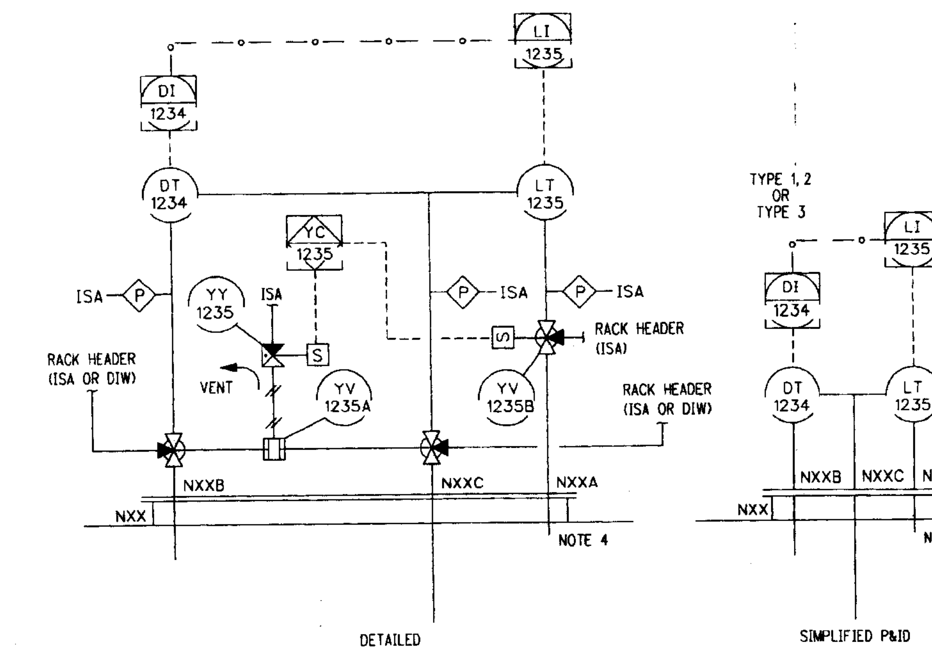
HOLD/OPEN ITEMS:

1. DELETED
2. DELETED
3. DELETED
4. DELETED



DETAIL 3

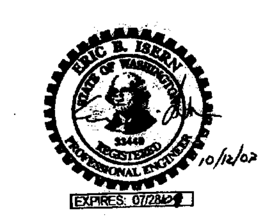
TYPICAL PTF ARRANGEMENT - ITS FLUIDICS
PJM - REDUNDANT CONTROLLER -
100% REDUNDANT VESSELS
NOTES 1, 2, 9, 11



DETAILED LEVEL INDICATION
WITH DENSITY COMPENSATION/INDICATION
(BUBBLER WITH FLUSH)

TABLE 1

ASS'Y NO.	JPP MODEL	FITTING/EQUIP. SIZE DRIVE NO1	SUCTION NO3	DRIVE NO2	SUCTION NO4
1	H15M	1/2"	1/2"	1/2"	1/2"
2	H25L	1"	1/2"	1"	1 1/2"
3	H40M	1 1/2"	1/2"	1 1/2"	1 1/2"
4	H50L	2"	3/4"	2"	2"
5	NOT USED				
7	L50M	1 1/2"	1 1/2"	2"	2"
8	H20L	3/4"	1/2"	3/4"	1"
9	NOT USED				
10	NOT USED				
11	NOT USED				
12	NOT USED				
13	NOT USED				
14	NOT USED				
15	H80S	2"	1"	3"	3"
16	H80L	2"	1"	3"	3"
17	H80SX2	1 1/2"	1 1/2"	2"	2"



PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR, AND BYPRODUCT MATERIAL AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
2	ISSUED FOR PERMITTING USE	LCS	[illegible]	[illegible]	[illegible]	10/14/07
1	ISSUED FOR PERMITTING USE	TB	BL	DCP	MH	12/13/03
0	ISSUED FOR PERMITTING USE	KC	US	N/A	GD	7/24/02

REVISION HISTORY

ISSUED BY RPP-WTP PDC	PROJECT No.	24590
	SITE	HANFORD
	AREA	200E
ISSUE STAMP	BUILDING No.	
	BY	DATE
ORIGINATOR	K. CHANDRASEKARN	7/17/02
CHECKER	UTPAL SEN	7/17/02
APPROVER	GARTH DUNCAN	7/24/02
REVIEWER	N/A	

CONTENT APPLICABLE TO ALARA? ☐ YES ☒ NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? ☐ YES ☒ NO EMS INITIAL IF YES ____

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID
SYMBOLS AND LEGEND
SHEET 6 OF 8

SCALE:

24590-WTP-M6-50-P0006 REV 2

SAFETY SCREEN IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002

'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED

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PLOTTED BY: lcsanvic
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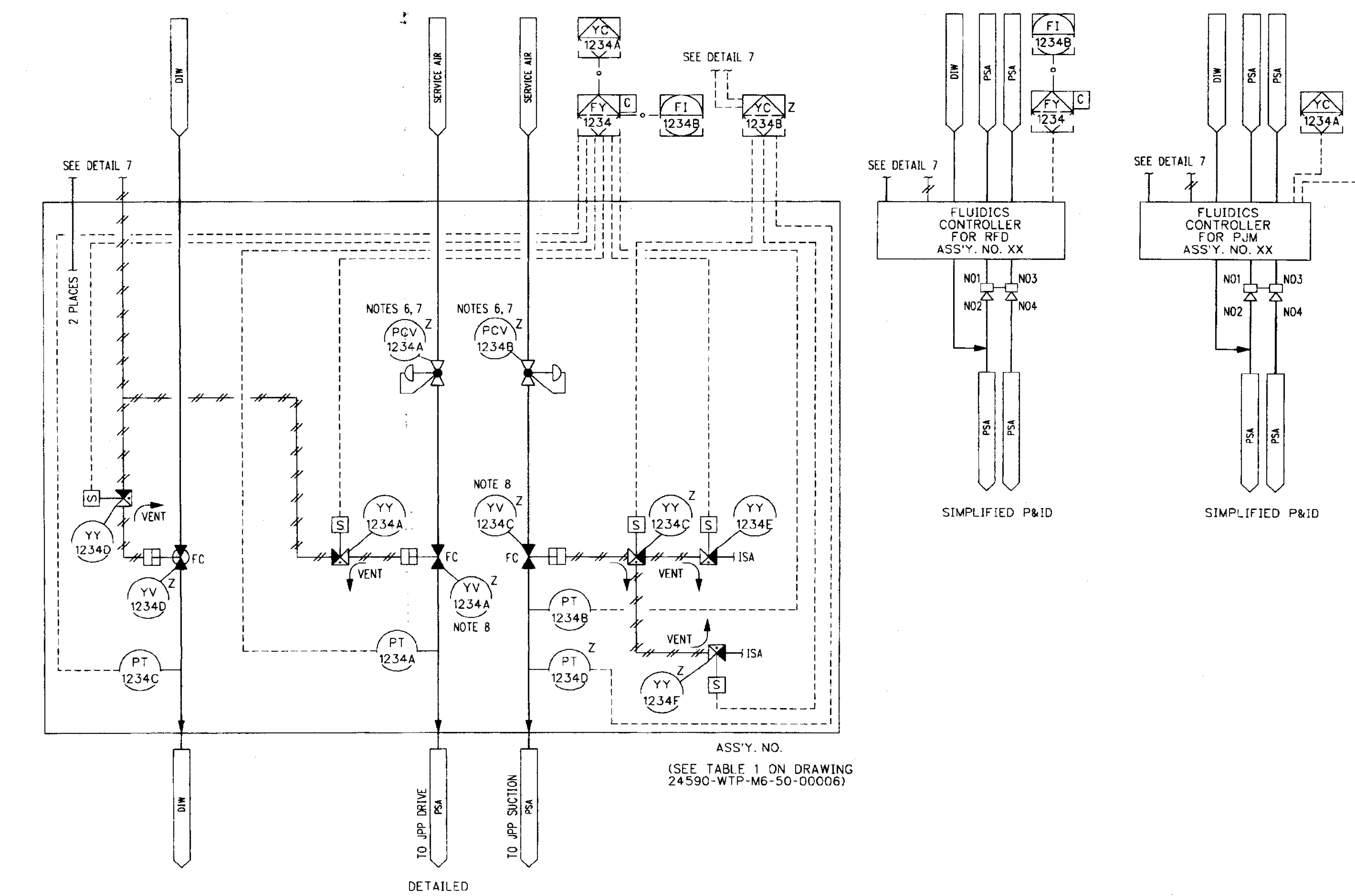
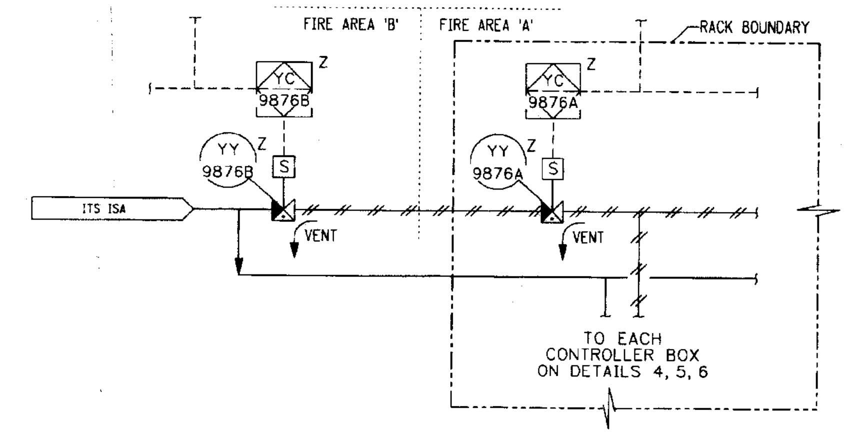


DETAIL 4

TYPICAL PTF ARRANGEMENT - FLUIDICS (RFD/PJM)
ITS - CONTROLLER - SUCTION MODE VENTING
NOTE 1

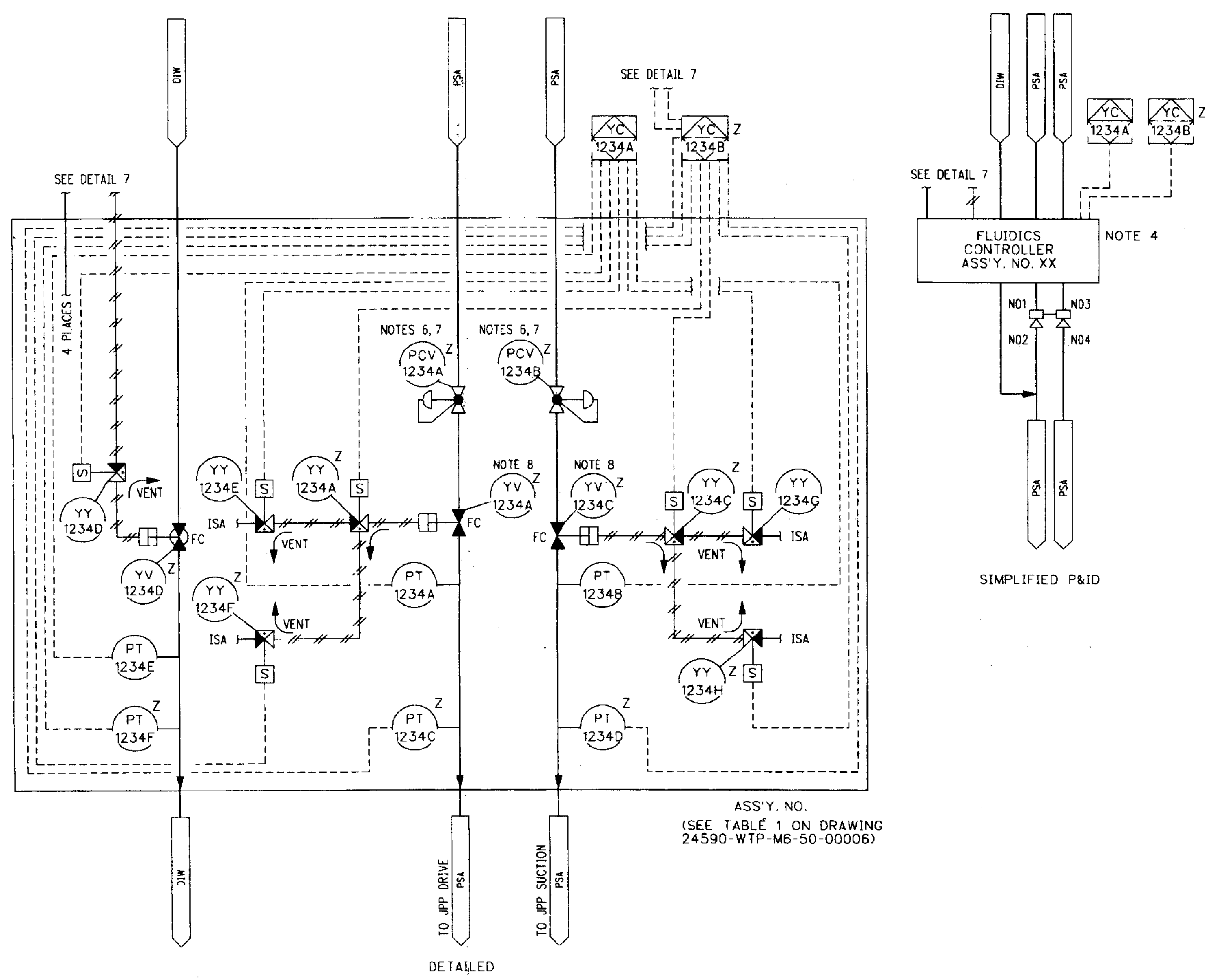


DETAIL 7

ITS ISA CONTROL TO DIW FLUSH VALVES
NOTE 1

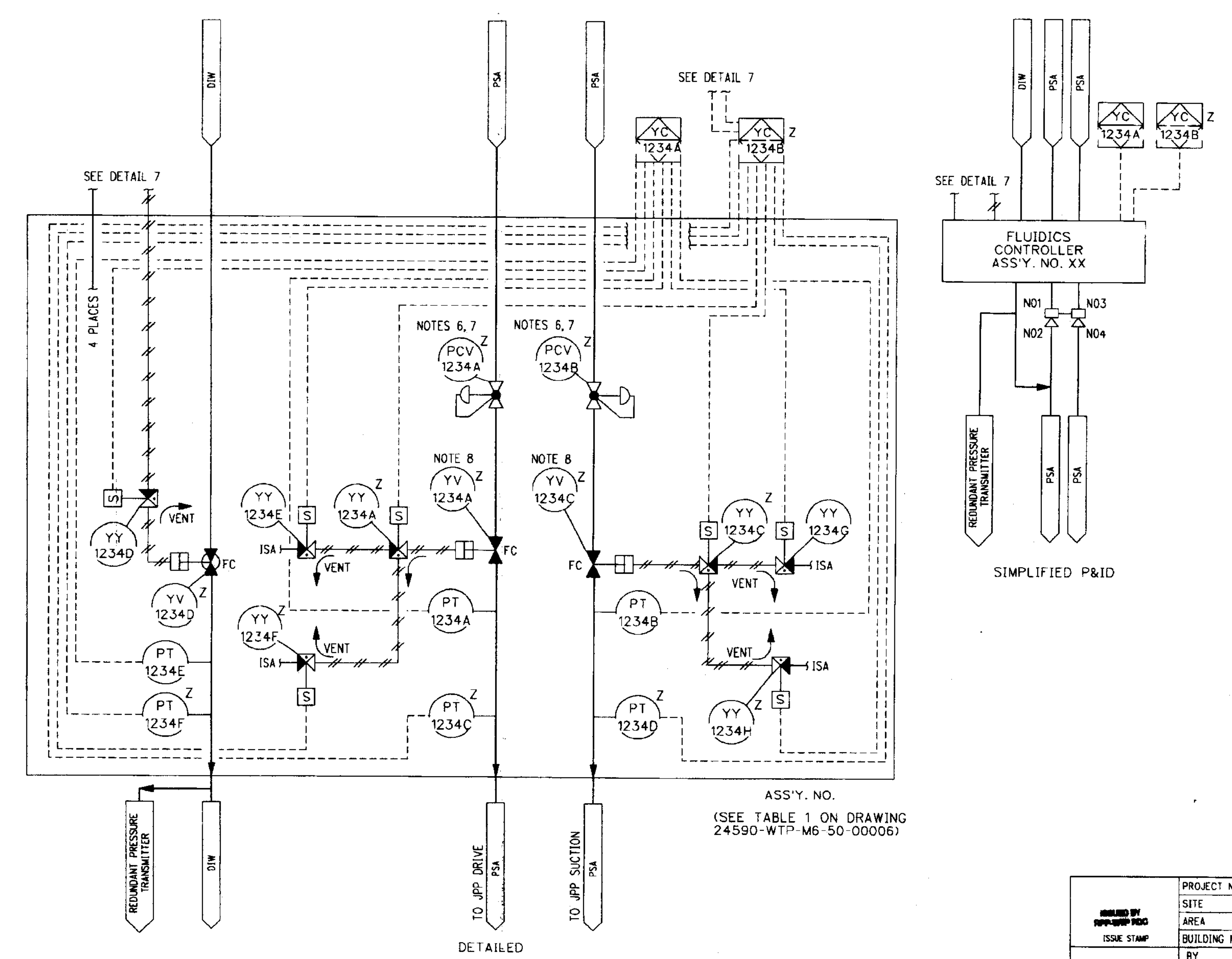
NOTES:

1. ACTUAL SEQUENCE NUMBERS WILL BE SHOWN ON THE P&IDs.
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. INSTALLATION AND VALVES ARE TAGGED WITH PROCESS SYSTEM IDENTIFIERS.
4. DETAIL 3 (REDUNDANT) AND DETAIL 6 (PRIMARY) CONTROLLERS ARE IN SEPARATE FIRE AREAS.
5. SEPARATE FIRE AREAS REQUIRED FOR COMPANION 50% REDUNDANT RACKS.
6. SEE SYSTEM DESCRIPTIONS FOR PCV SETPOINTS.
7. PCV PROVIDED WITH INTEGRAL OUTLET PRESSURE GAUGE.
8. VALVE TYPE SHOWN IS A GENERAL SYMBOL. ANGLE SEAT VALVES ARE USED FOR RFD/PJM CONTROL APPLICATIONS.
9. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.



DETAIL 5

TYPICAL PTF ARRANGEMENT - ITS FLUIDICS
PJM - CONTROLLER - 50% REDUNDANT AND SINGLE TRAIN
NOTES 1, 5



DETAIL 6

TYPICAL PTF ARRANGEMENT - ITS FLUIDICS
PJM - PRIMARY CONTROLLER - 100% REDUNDANCY VESSELS
NOTES 1, 4

EXPIRES: 07/28/09 10/12/07

PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR, AND BYPRODUCT MATERIAL AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
0	ISSUED FOR PERMITTING USE	LCS	WK	CER / EA	TRC	10/14/07

REVISION HISTORY

PROJECT No.	24590	
SITE	HANFORD	
AREA	200E	
BUILDING No.		

ISSUED BY RPP-WTP PDC
ISSUE STAMP

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

	BY	DATE
ORIGINATOR	[signature]	9/28/07
CHECKER	[signature]	10/1/07
APPROVER	[signature]	10/14/07
REVIEWER	[signature]	10/4/07

CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO E&NS INITIAL IF YES

P&ID SYMBOLS AND LEGEND SHEET 7 OF 8

SCALE: NONE
24590-WTP-M6-50-P0007
REV 0

SAFETY SCREEN IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002
'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED
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PLOTTED BY: lcsanvic
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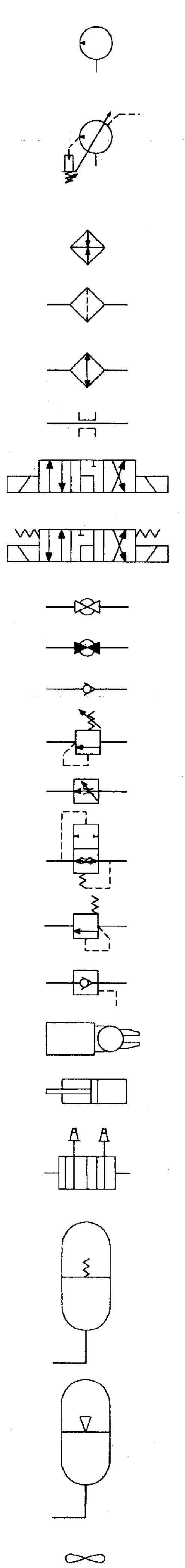
FORM E_SDN.DGN 02/2003

HYDRAULIC SYMBOLS
(NOT TAGGED, NON-INTELLIGENT)



- HYDRAULIC FIXED DISPLACEMENT PUMP
- HYDRAULIC VARIABLE DISPLACEMENT PRESSURE COMPENSATING PUMP
- HYDRAULIC HEATER
- HYDRAULIC FILTER
- HYDRAULIC COOLER
- HYDRAULIC FLOW SILENCER
- FOUR-WAY, THREE-POSITION, SOLENOID-OPERATED VALVE
- FOUR-WAY, THREE-POSITION, SOLENOID-OPERATED, SPRING-CENTERED VALVE
- HYDRAULIC BALL VALVE - NORMALLY OPEN
- HYDRAULIC BALL VALVE - NORMALLY CLOSED
- HYDRAULIC CHECK VALVE
- HYDRAULIC PRESSURE REDUCING VALVE
- HYDRAULIC FLOW CONTROL VALVE
- HYDRAULIC VELOCITY FUSE
- HYDRAULIC PRESSURE RELIEF VALVE
- HYDRAULIC PILOT-OPERATED CHECK VALVE
- HYDRAULIC POWER MANIPULATOR
- HYDRAULIC CYLINDER / HYDRAULIC SHEAR CYLINDER
- HYDRAULIC HOSE REEL
- HYDRAULIC SYSTEM SPRING-LOADED ACCUMULATOR
- HYDRAULIC SYSTEM GAS-CHARGED ACCUMULATOR
- HYDRAULIC SYSTEM COOLING FAN

SYSTEM LOCATOR/SYSTEM NAME
NOTE 1

AFR	ANTI-FOAM REAGENT SYSTEM
AMR	REAGENT AMMONIA SYSTEM
ARV	ATMOSPHERIC REFERENCE VENTILATION SYSTEM
ASJ	AUTOSAMPLING CONTROL SYSTEM
ASX	AUTOSAMPLING SYSTEM
BAG	BOTTLED ARGON GAS SYSTEM
BNG	BOTTLED NITROGEN GAS SYSTEM
BHG	BOTTLED HELIUM GAS SYSTEM
BSA	BREATHING SERVICE AIR SYSTEM
CDG	CARBON DIOXIDE GAS SYSTEM
CHW	CHILLED WATER SYSTEM
CME	COMMUNICATIONS ELECTRICAL SYSTEM
CNP	CESIUM NITRIC ACID RECOVERY PROCESS SYSTEM
CPE	CATHODIC PROTECTION ELECTRICAL SYSTEM
CRP	CESIUM RESIN ADDITION PROCESS SYSTEM
CXP	CESIUM ION EXCHANGE PROCESS SYSTEM
C1V	C1 VENTILATION SYSTEM
C2V	C2 VENTILATION SYSTEM
C3V	C3 VENTILATION SYSTEM
C5V	C5 VENTILATION SYSTEM
DCE	DC ELECTRICAL (125 V) SYSTEM
DFO	DIESEL FUEL OIL SYSTEM
DIW	DEMINERALIZED WATER SYSTEM
DOW	DOMESTIC (POTABLE) WATER SYSTEM
DWJ	PLANT DATA WAREHOUSING AND REPORTING SYSTEM
EDX	EMERGENCY DIESEL GENERATOR SYSTEM
EMJ	ENVIRONMENTAL MONITORING SYSTEM
FDE	FIRE DETECTION AND ALARM SYSTEM
FEP	WASTE FEED EVAPORATION PROCESS SYSTEM
FNJ	FACILITY NETWORK INFRASTRUCTURE SYSTEM
FPW	FIRE PROTECTION WATER SYSTEM
FRP	WASTE FEED RECEIPT PROCESS SYSTEM
FSW	FIRE SERVICE WATER STORAGE AND DISTRIBUTION SYSTEM
GFR	GLASS FORMERS REAGENT SYSTEM
GRE	GROUNDING AND LIGHTING PROTECTION ELECTRICAL SYSTEM
HCP	HLW CONCENTRATE RECEIPT PROCESS SYSTEM
HDH	HLW CANISTER DECONTAMINATION HANDLING SYSTEM
HEH	HLW CANISTER EXPORT HANDLING SYSTEM
HFH	HLW FILTER CAVE HANDLING SYSTEM
HFP	HLW MELTER FEED PROCESS SYSTEM
HLP	HLW LAG STORAGE AND BLENDING PROCESS SYSTEM
HMH	HLW MELTER HANDLING SYSTEM
HMP	HLW MELTER PROCESS SYSTEM
HOP	MELTER OFFGAS TREATMENT PROCESS SYSTEM
HPH	HLW CANISTER POUR HANDLING SYSTEM
HPS	HIGH PRESSURE STEAM SYSTEM
HRH	HLW CANISTER RECEIPT HANDLING SYSTEM
HSH	HLW MELTER CAVE SUPPORT HANDLING SYSTEM
HTE	HEAT TRACE ELECTRICAL SYSTEM
ISA	INSTRUMENT SERVICE AIR SYSTEM
LCP	LAW CONCENTRATE RECEIPT PROCESS SYSTEM
LEH	LAW CONTAINER EXPORT HANDLING SYSTEM
LFH	LAW CONTAINER FINISHING HANDLING SYSTEM
LFP	LAW MELTER FEED PROCESS SYSTEM
LIJ	LABORATORY INFORMATION MANAGEMENT SYSTEM
LMH	LAW MELTER HANDLING SYSTEM
LMP	LAW MELTER PROCESS SYSTEM
LOP	LAW PRIMARY OFFGAS PROCESS SYSTEM
LPH	LAW CONTAINER POUR HANDLING SYSTEM
LPS	LOW PRESSURE STEAM SYSTEM
LRH	LAW CONTAINER RECEIPT HANDLING SYSTEM
LSH	LAW MELTER EQUIPMENT SUPPORT HANDLING SYSTEM
LTE	LIGHTING ELECTRICAL SYSTEM
LVE	LOW VOLTAGE ELECTRICAL (480/208/120 V) SYSTEM
LVP	LAW SECONDARY OFFGAS/VESSEL VENT PROCESS SYSTEM
MHJ	MECHANICAL HANDLING CONTROL SYSTEM
MVE	MEDIUM VOLTAGE ELECTRICAL (13.8/4.16 kV) SYSTEM
MXG	MISCELLANEOUS GASES SYSTEM
MXR	MISCELLANEOUS REAGENTS SYSTEM
NAR	NITRIC ACID REAGENT SYSTEM
NLD	NON-RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM
PCJ	PROCESS CONTROL SYSTEM
PCW	PLANT COOLING WATER SYSTEM
PFH	PRETREATMENT FILTER CAVE HANDLING SYSTEM
PIH	PRETREATMENT IN-CELL HANDLING SYSTEM
PJV	PULSE JET VENTILATION SYSTEM
PPJ	PROGRAMMABLE PROTECTION SYSTEM
PSA	PLANT SERVICE AIR SYSTEM
PSW	PROCESS SERVICE WATER SYSTEM
PTJ	PROCESS AND MECHANICAL HANDLING CCTV SYSTEM
PVA	PLANT VACUUM AIR SYSTEM
PVP	PRETREATMENT VESSEL VENT PROCESS SYSTEM
PVV	PROCESS VESSEL VENT EXHAUST SYSTEM
PWD	PLANT WASH AND DISPOSAL SYSTEM
RDP	SPENT RESIN COLLECTION AND DEWATERING PROCESS SYSTEM
RLD	RADIOACTIVE LIQUID WASTE DISPOSAL SYSTEM
RPJ	RADIOLOGICAL PERSONNEL MONITORING SYSTEM
RWH	RADIOACTIVE SOLID WASTE HANDLING SYSTEM
RWW	RAW WATER SYSTEM
SCE	SECURITY ELECTRICAL SYSTEM
SCW	STEAM CONDENSATE WATER SYSTEM
SDJ	STACK DISCHARGE MONITORING (RAD AND NON-RAD) SYSTEM
SDX	STANDBY DIESEL GENERATOR SYSTEM
SHR	SODIUM HYDROXIDE REAGENT SYSTEM
SND	SANITARY DISPOSAL SYSTEM
SNR	SODIUM NITRITE REAGENT SYSTEM
SPR	SODIUM PERMANGANATE REAGENT SYSTEM
STR	STRONTIUM NITRITE REAGENT SYSTEM
SWD	STORM WATER DISPOSAL SYSTEM
TCP	TREATED LAW CONCENTRATE STORAGE PROCESS SYSTEM
TLP	TREATED LAW EVAPORATION PROCESS SYSTEM
TSJ	TRAINING SIMULATOR SYSTEM
UFP	ULTRAFILTRATION PROCESS SYSTEM
UPE	120 VAC UNINTERRUPTIBLE POWER ELECTRICAL SYSTEM
URR	UREA REAGENT SYSTEM
VHW	VENTILATION HOT WATER SYSTEM
WTJ	WASTE TRACKING AND INVENTORY SYSTEM

ABBREVIATIONS

PROJECT SUBDIVISION

- WTP - WASTE TREATMENT PLANT
- PTF - PRETREATMENT FACILITY
- LAW - LOW-ACTIVITY WASTE VITRIFICATION FACILITY
- HLW - HIGH-LEVEL WASTE VITRIFICATION FACILITY
- BOF - BALANCE OF FACILITIES
- LAB - ANALYTICAL LABORATORY FACILITIES

- ATM - ATMOSPHERE
- FBOX - FLOORBOX
- WBOX - WALLBOX
- ITS - IMPORTANT TO SAFETY
- S/D - SHUT DOWN
- ICN - INTEGRATED CONTROL NETWORK
- PPJ - PROGRAMMABLE PROTECTION SYSTEM
- PCJ - PROGRAMMABLE CONTROL SYSTEM

- LC - LOCKED CLOSED
- LO - LOCKED OPEN
- LT - LOCKED THROTTLED

- FC - FAIL CLOSED
- FI - FAIL INDETERMINATE
- FL - FAIL LAST POSITION
- FO - FAIL OPEN

- NC - NORMALLY CLOSED
- NO - NORMALLY OPEN

- MAWP - MAXIMUM ALLOWABLE WORKING PRESSURE

- FOB - FLAT ON BOTTOM
- FOT - FLAT ON TOP
- (D) - DRAIN
- (V) - VENT
- CO - CLEAN OUT

- BC - BLACK CELL
- HC - HOT CELL

- AG - ABOVE GROUND
- UG - UNDER GROUND

- ET - ELECTRIC TRACING

RADIOLOGICAL AREA CLASSIFICATION (BASED ON DOSE RATE)

- R1 - RADIOLOGICAL CONTROLLED AREA
- R2 - RADIOLOGICAL BUFFER AREA
- R3 - AVERAGE RADIATION AREA
- R4 - MAXIMUM RADIATION AREA
- R5 - HIGH AND VERY HIGH RADIATION AREA

RADIOLOGICAL AREA CLASSIFICATION (BASED ON CONTAMINATION)

- C1 - RADIOLOGICAL CONTROLLED AREA
- C2 - RADIOLOGICAL BUFFER AREA
- C3 - CONTAMINATION AREA
- C4 - HIGH CONTAMINATION AREA
- C5 - AIRBORNE RADIOACTIVITY AREA

GENERAL NOTES

1. QUALITY LEVELS AND SEISMIC CATEGORIES SHOWN ARE THE MINIMUM REQUIREMENTS. DESIGN, FABRICATION, AND INSTALLATION MAY BE TO A HIGHER CLASSIFICATION.

SLOPE REQUIREMENTS

GENERAL PIPE SLOPE REQUIREMENTS AND DEFINITIONS

1. PIPE SLOPES ARE TO CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE NOTED ON THE P&IDs.
2. THE SLOPE SHOWN ON A P&ID IS THE MINIMUM REQUIRED SLOPE.
3. THE PIPE SLOPE TO HAVE A CONTINUOUS SLOPE BETWEEN VERTICAL SEGMENTS.
4. PROCESS LINES BETWEEN FACILITIES TO HAVE THE MINIMUM SLOPE SPECIFIED TO MEET LEAK DETECTION REQUIREMENTS; DEVIATIONS DO NOT APPLY.
5. POCKETING IS NOT ALLOWED.
6. "POCKETING" IS DEFINED AS ANY CHANGE TO A HORIZONTAL PIPE RUN THAT CREATES A LOW POINT WITHOUT PROVISIONS FOR ADEQUATE DRAINING.
7. "FREE DRAINING" IS DEFINED AS HAVING LOW POINT DRAINS WHERE NECESSARY TO DRAIN THE LINE.
8. "SELF-DRAINING" IS DEFINED AS HAVING A CONTINUOUS SLOPE OR HAVING HORIZONTAL LINES WITHOUT INTERMEDIATE LOW POINTS OR POCKETS.

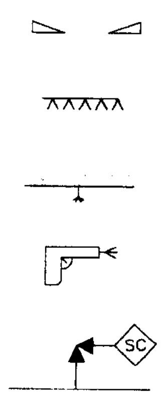
ADDITIONAL REQUIREMENTS

9. FOR THE STEAM LINES: DRIP LEGS AND STEAM TRAPS SHALL BE PROVIDED AT ANY NATURAL COLLECTION POINT, LOW POINT, AT THE BOTTOM OF RISERS AND EXPANSION LOOPS. IF ANY OF THESE ARE LOCATED GREATER THAN 150 FEET APART, ADDITIONAL DRIP LEGS AND STEAM TRAPS SHALL BE PROVIDED SUCH THAT DISTANCE BETWEEN THEM DOES NOT EXCEED 150 FEET, OR UNLESS OTHERWISE NOTED ON THE P&ID.
10. BLACK CELL PIPING TO BE ROUTED AS "SELF DRAINING" AND "DO NOT POCKET" WHERE NO SLOPE IS INDICATED, EXCEPT AS NOTED BELOW IN DEVIATIONS FROM PIPE SLOPE.
11. ALL NON-BLACK CELL PIPING TO BE FREE DRAINING, UNLESS OTHERWISE NOTED.
12. JUMPERS CONVEYING SOLIDS MAY BE HORIZONTAL, BUT PROVISIONS MUST BE MADE FOR FLUSHING UPON SHUTDOWN AND PRIOR TO REMOVAL. JUMPERS FOR CONVEYING CLEAR LIQUIDS MAY BE HORIZONTAL AND DO NOT REQUIRE A FLUSH CONNECTION.

DEVIATIONS FROM PIPE SLOPE

13. SHORT SECTIONS OF A SELF-DRAINING LINE THAT REQUIRES A SLOPE BETWEEN VERTICAL SEGMENTS (10% OR LESS OF THE PIPE RUN), MAY BE LESS THAN THE SPECIFIED SLOPE. THIS DOES NOT APPLY TO UNDERGROUND WASTE TRANSFER LINES BETWEEN FACILITIES.
14. WALL PENETRATIONS AND IMMEDIATELY ADJACENT AREAS MAY BE HORIZONTAL WITH THE FOLLOWING LIMITS.
    I. WITH FLUSHING PROVISIONS FOR PUMPED OR PRESSURIZED SYSTEMS, HORIZONTAL RUNS ARE TO BE NO MORE THAN THE WIDTH OF THE WALL PLUS 8 FEET (BOTH SIDES COMBINED).
    II. WITHOUT FLUSHING PROVISIONS FOR PUMPED OR PRESSURIZED SYSTEMS, HORIZONTAL RUNS ARE TO BE NO MORE THAN THE WIDTH OF THE WALL PLUS 2 FEET (BOTH SIDES COMBINED).
    III. HORIZONTAL RUNS FOR GRAVITY DRAINS WITH NEWTONIAN FLUIDS ARE TO BE NO MORE THAN THE WIDTH OF THE WALL PLUS 2 FEET (BOTH SIDES COMBINED).
15. PIPING CONNECTIONS TO TANKS, VESSELS, EQUIPMENT, CABINETS, BULGES, AND JUMPERS MAY BE HORIZONTAL, PRIOR TO THE CONNECTION AS REQUIRED, TO FACILITATE CONNECTING THE PIPING TO THE COMPONENT NOZZLE. THE REQUIRED PIPING SLOPE SHOULD BE ACHIEVED AS SOON AS PRACTICAL AT THE CONNECTION AND WITHIN FIVE PIPE DIAMETERS OR 2 FEET, WHICH EVER IS GREATER.
16. FOR TOP PENETRATIONS, PIPE ROUTING INTO TANKS, VESSELS, OR EQUIPMENT MAY HAVE A HIGH POINT AND SLOPE IN THE OPPOSITE DIRECTION FROM THE SLOPE SHOWN ON THE P&ID, PRIOR TO THE TANK, VESSEL, OR EQUIPMENT.
17. FOR FIELD RUN INSTRUMENT SENSING TUBING, REFER TO REFERENCE 3. WALL PENETRATIONS TO BE THE SAME AS 14(I) THROUGH 14(III) ABOVE.

MISCELLANEOUS SYMBOLS



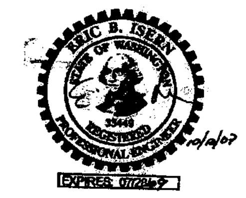
- SLOPE INDICATOR
- OPEN HEAD SPRINKLERS
- SPRAY NOZZLE
- DECON SPRAY GUN
- SAMPLE CONNECTION (SHOWN WITH ANGLE VALVE)

NOTES:

1. SYSTEM DESIGNATOR SHALL BE IN ACCORDANCE WITH SYSTEM AND AREA LOCATORS LIST AND DIVISION OF RESPONSIBILITY 24590-WTP-RPT-ENG-02-009.
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. THE COMPONENTS SHOWN ON THIS DRAWING IN PHANTOM DO NOT REQUIRE INDEPENDENT QUALIFIED REGISTERED PROFESSIONAL ENGINEER (IQRPE) ASSESSMENTS OF DESIGN OR INSTALLATION INSPECTIONS BY A QUALIFIED INSTALLATION INSPECTOR IN ACCORDANCE WITH THE DWP AND/OR WASHINGTON ADMINISTRATIVE CODE (WAC) REQUIREMENTS.

REFERENCES:

1. DESIGN GUIDE - RECOMMENDED SLOPES FOR PIPING SYSTEMS 24590-WTP-GPG-M-027.
2. DELETED
3. DRAWING - INSTRUMENT SENSING LINE SLOPE DESIGN REQUIREMENTS 24590-WTP-J8-50-06012.
4. PIPING ASSEMBLY DETAILS 24590-WTP-3PB-P000-T0001.
5. ISA STANDARD, ANSI/ISA-S5.1-1984 R1992 "INSTRUMENTATION SYMBOLS AND IDENTIFICATION" AND STANDARD ISA-S5. 3-1983 "GRAPHIC SYMBOLS FOR DISTRIBUTED CONTROL/SHARED DISPLAY INSTRUMENTATION, LOGIC AND COMPUTER SYSTEMS".
6. DELETED
7. ISO 1219-1, FLUID POWER SYSTEMS AND COMPONENTS, GRAPHIC SYMBOLS AND CIRCUIT DIAGRAMS-PART 1: GRAPHIC SYMBOLS.
8. ISO 1219-2, FLUID POWER SYSTEMS AND COMPONENTS, GRAPHIC SYMBOLS AND CIRCUIT DIAGRAMS-PART 2: CIRCUIT DIAGRAMS.
9. 24590-WTP-3PS-JXF0-T0002, ENGINEERING SPECIFICATION FOR INSTRUMENT PIPING MATERIAL CLASS QUALITY LEVEL Q.



10/2/07

PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR, AND BYPRODUCT MATERIAL AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

REVISION HISTORY

REV	DESCRIPTION	ORG	CHKD	RVWD	APVD	DATE
0	ISSUED FOR PERMITTING USE	LCS	[signature]	CEK	RCL	10/14/07

ISSUED BY RPP-WTP PDC	PROJECT No.	24590	
	SITE	HANFORD	
	AREA	200E	
ISSUE STAMP	BUILDING No.		
	BY	DATE	
ORIGINATOR	[signature]	9/28/07	
CHECKER	[signature]	10/1/07	
APPROVER	[signature]	10/14/07	
REVIEWER	[signature]	10/4/07	

CONTENT APPLICABLE TO ALARA? [ ] YES [X] NO
ADR NO. N/A REV: N/A
SAFETY SCREEN REQUIRED? [ ] YES [X] NO EMS INITIAL IF YES

RIVER PROTECTION PROJECT
WASTE TREATMENT PLANT
2435 STEVENS CENTER PLACE
RICHLAND, WA 99354

CONTRACT No: DE-AC27-01RV14136

P&ID SYMBOLS AND LEGEND SHEET 8 OF 8

SCALE: NONE

24590-WTP-M6-50-P0008 REV 0

SAFETY SCREEN IS REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SREG-002

'E' SIZE - 44x34
COMPUTER GENERATED - MANUAL CHANGES NOT PERMITTED

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PLOTTED BY: lcsanvic
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